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조경학석사학위논문

Wayfinding Design for
Seoul National University Gwanak
Campus

서울대학교 관악 캠퍼스의
디자인 길 찾기

2014년 8월

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Gwanak Campus is part of Seoul National University; a national research university located in Seoul, the capital of Korea. As of April 1, 2013, the number of enrolled students in Seoul National University amounts to 28,011 among which more than 10% are foreign students. The number of international students increases every year, which has generated the need to improve the campus facilities adapting them to a more universal system. However, international communication problems are still evident. From foreign perspective there are innumerable language barriers starting from the simple recognition and orientation in space. SNU Gwanak Campus has a complex landscape system, buildings are settled among the mountains, some plains, streams and vegetation that accompany our ways. Curves, ups and downs disorient and confuse because it does not allow seeing clearly our destinations. Therefore, people get lost and they try to figure out in which direction to go. The lack of signs around the space makes not only the foreign students but also visitors and Korean students feel unsafe and frustrated to be unable to reach places on time. This study and research intends to solve the main problems related to way-findings through, a signage system design proposal for SNU Gwanak Campus. The design proposal will be developed by considering different methods to identify and compare the need of Korean and non-Korean SNU campus users. The new system will be devise based on the landscape features. The preliminary wayfinding design will be tested through an experiment and focus group in order to prove its usefulness and/or improve it. The developed guideline may be a suggestion to implement on campus and thus contribute to its design.

Keywords: Signage Guideline, Sign System, Environmental Design, Campus Planning

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Chapter 1 Introduction

Landscape is a system defined by soil, water, topography, vegetation and patterns of human occupation.¹⁾ It has a natural rhythm and its direction varies depending on the landscape. The landscape and its components are part of an environment that people interact with in various situations. An example of a situation is a person's inclination to orient him/herself with their surroundings. Orientation is the physical position or direction of something or someone that provides direction to get from one point to the other. This action is the process in which the visitor must know where he / she is, make choices on which direction to take, and create a mental map for future visits. According to Kevin Lynch, wayfinding is all about investigating every direction of the semiotic dimension, which is often hidden in the folds of our environments.²⁾ For Arthur and Passini (1992), the wayfinding task is to ensure that an environment is able to make understand both where you are, favoring the construction of a mental map of the place, and which path to take to get, without physical or psychological impediments, to a particular destination.³⁾

Considering the natural features of the landscape system, the inhabitants can behave within the space without becoming disoriented and while developing a sense and identity of the area. Visual characteristics play an indispensable role in a location's landscape. Without special visual characteristics in the architecture, the inhabitants are more prone to get confused or lost.

Seoul National University Gwanak campus has a unique landscape that make navigation from one location to another very complicated, especially in the case of students who do not speak Korean. This research and design project addresses the problems that students face when trying to orient themselves with the campus landscape, and recommends solutions to the problems.

1) Wybe Kuitert, Seoul Landscape System, 2010

2) Lynch, K. (1960). The image of the city. Cambridge, MA: MIT Press.

3) Arthur, P. & Passini, R. (1992). Wayfinding. People, signs and architecture. New York: McGrawHill.

1.1 Seoul National University campus

A campus university is a British term for a university situated on a specific point or an area on the land's surface, with student accommodation, teaching and research facilities, and leisure activities all together. It is derived from the Latin term campus, meaning "a flat expanse of land, plain, field".⁴⁾ However, this word does not suit with the reality of Seoul National University (SNU) Gwanak campus from the topography view, concerning its surface shape and features. The SNU Gwanak campus is located in Gwanak District (Gwanak-gu), an administrative subdivision (gu) of Seoul, South Korea. It lies in the southern part of Seoul, bordering Seoul and Anyang within the Gyeonggi Province. The name of the subdivision is derived from the Gwanak Mountain (Gwanaksan), which is its most important natural landmark since it dominates the local geography. The name Gwanak means "hat-shaped peak," and refers to its gat-like profile⁵⁾, which is a type of Korean traditional hat. The SNU Gwanak campus is situated on a complex landscape system, which it inherits from the Gwanak Mountain's similarly complex landscape that includes the base of a mountain and rolling hills. Buildings are located within the mountains' terrain, including plains, curves, and peaks and valleys. The campus' land formations are very different from the original flat definition of the English word campus.

4) Oxford Latin Dictionary, ed. P. G. W. Glare, Oxford University Press, Oxford (1982), p. 263

5) (Korean) "명칭의 유래". Gwanak-gu website. Retrieved 2006-05-28.



Figure 1. Google map SNU Gwanak campus.

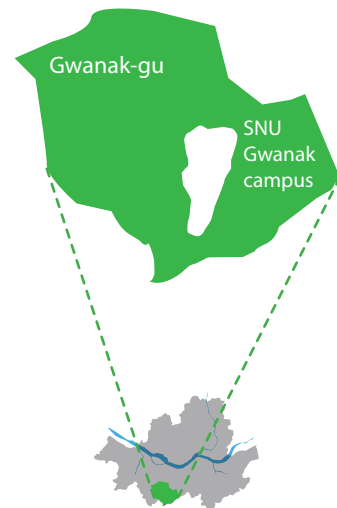


Figure 2. Seoul, Gwanak District and SNU Gwanak campus.
Own elaboration.

1.2 General Facts Seoul National University

In 1975, the SNU Comprehensive Plan established the main campus in Gwanak-gu. Currently, there are about 200 buildings, over half of which have been constructed since 1990. The school's medical, dental and nursing schools, as well as the main branch of Seoul National University Hospital, are on the former site of Gyeongseong University's medical department at the Yongon campus. In 2003, the Colleges of Agricultural and Life Sciences and Veterinary Medicine were relocated from Suwon to Gwanak.⁶⁾

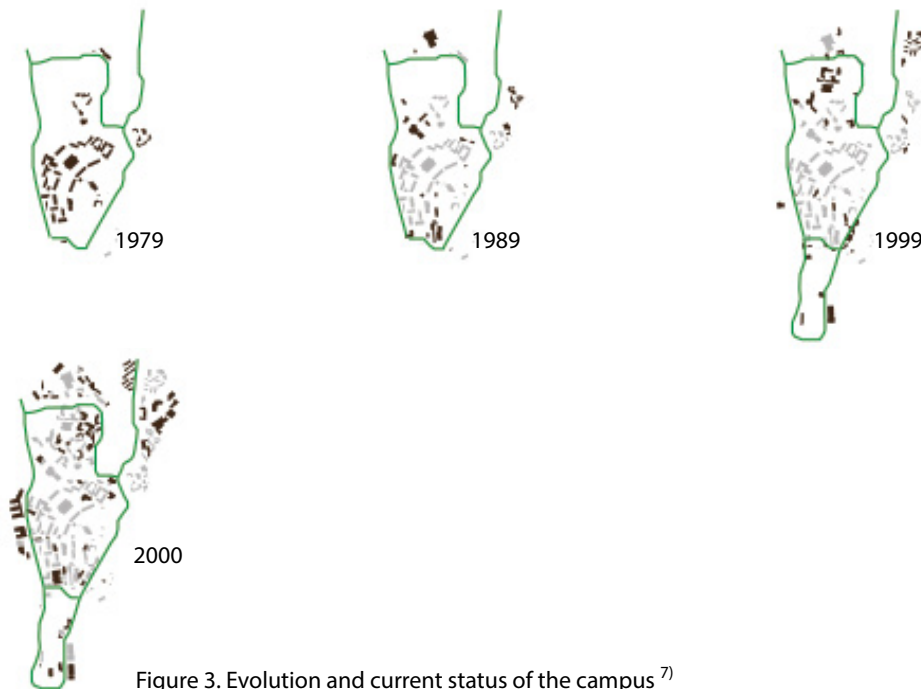


Figure 3. Evolution and current status of the campus ⁷⁾

The campus is constantly changing and it is seizing in a complex way the available land formation. Today, the campus reaches an urban area of 4.2 km² (1037 acres), and 7.9 km² (1,960 acres), including the arboreta and other campuses.

6) <http://en.snu.ac.kr>

7) 김승희 - 서울대학교 캠퍼스 부문 장기계획 (2007-2011), pg 51

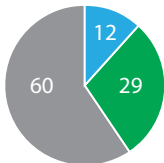
As of April 1, 2013, the number of enrolled students in Seoul National University amounts to 28,011, distributed as follows:

3,297

Graduate Students
in Doctoral Program

8,002

Graduate
Students in
Master's Program

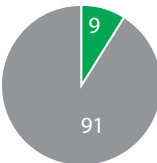


16,712

Undergraduate
Students

2,881

Number of
International Students
in Degree Programs



28,011

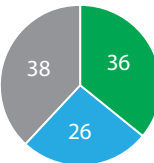
Number of
Enrolled
Students

759

Graduate Students
in Doctoral Program

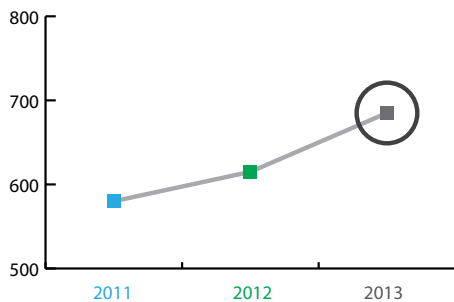
1,029

Undergraduate
Students



1,093

Graduate Students
in Master's Program



Figures 4. About SNU Students. Own elaboration.

The amount of international students reached nearly 10% of SNU's total student population. This number has been gradually increasing since 2011. The constant growth of international students emphasizes the need to improve the campus facilities and adapt them to reflect a more universal system of design and landscape. Additionally, international communication problems are very apparent. From a non-Korean perspective, there are language barriers within the campus landscape, including the absence of non-Korean signs that makes it complicated to recognize and become oriented with the various locations of the campus.

1.3 Problem Statement

SNU Gwanak campus can be comparable to a small well-organized city, however there is an evident wayfinding problem to face in the daily life. The wayfinding process has been a negative experience for most users of SNU campus. The feeling of being lost or disoriented has a negative effect on a person's well-being and is expressed through anger, hostility or indignation.⁸⁾

The particular geography, the constant architectural changes and a signage system of Gwanak campus are not synchronized with these changes, are some factors that keep users and visitors disoriented, disregarding the idiomatic and cultural barriers for this increasingly global university context.

1.4 SNU Orientation System

From the design perspective, the orientation system is composed by several elements that reflect the environment in a graphic dimension. In this sense, the main element of the system is the site map. The term "map" comes from the medieval Latin *Mappa mundi*, wherein *mappa* meant napkin or cloth and *mundi* the world. Thus, "map" became the shortened term referring to a two-dimensional representation of the surface of the world. A map goes between the human mind and the environment. Through the map a user has the first interaction with a new site, in most cases. It is a graphic resource to locate a user in a specific place. It is a complex and abstract information system that becomes "real" once the user starts to experience the site.

8) Michael J. O'Neill, 'Evaluation of a Conceptual Model of Architectural Legibility,' Environment and Behavior (1991).

The first problem appears when the user starts to read the campus map. To digest the SNU map information requires a considerable mental efforts. The current map was devised from a user's view that starts experiencing the site from the main access, which is located in the main gate. The gates are part of the farthest places from the core area. Although the main and the back gates are the site's entrances and exits, the experience in these places is usually a rapid transit, then the next closest locations are quite far, so that the gates as well as the Engineering College inherently have some level of isolation. Therefore the navigation focus from this point is not efficient; apart from the fact that most pedestrian visitors start walking from places other than these points.

Secondly and consequently with the previous observation, the North is unclear on the campus map. It is not indicated and instead the East is taking the North's universal position, which is not compatible with wayfinding technologies that could complement the navigation action.

A third SNU map obstacle is the absence of landmarks, aside the main open spaces. A landmark plays an important role in the wayfinding process. It is a recognizable natural or man-made feature used for navigation, a feature that stands out from its surrounding environment and is often visible from long distances. SNU Gwanak campus inherited its name from the Gwanak Mountain, which is visible from the main gate, exactly at its opposite direction. Gwanak Mountain is the main natural landmark that points out the south. Moreover, a considerable amount of visitors go across the campus every day in order to climb this mountain. Despite all this background, the mountain is absent on maps. In an environment surrounded by a uniform architectural features, landmarks need to be highlighted. On the other hand, but under the same idea, a defined pedestrian route hierarchy on campus is essential. Hierarchy is the universal way of mental and physical organization. This arrangement of items lets the users knows how to address and get the necessary guidance references.

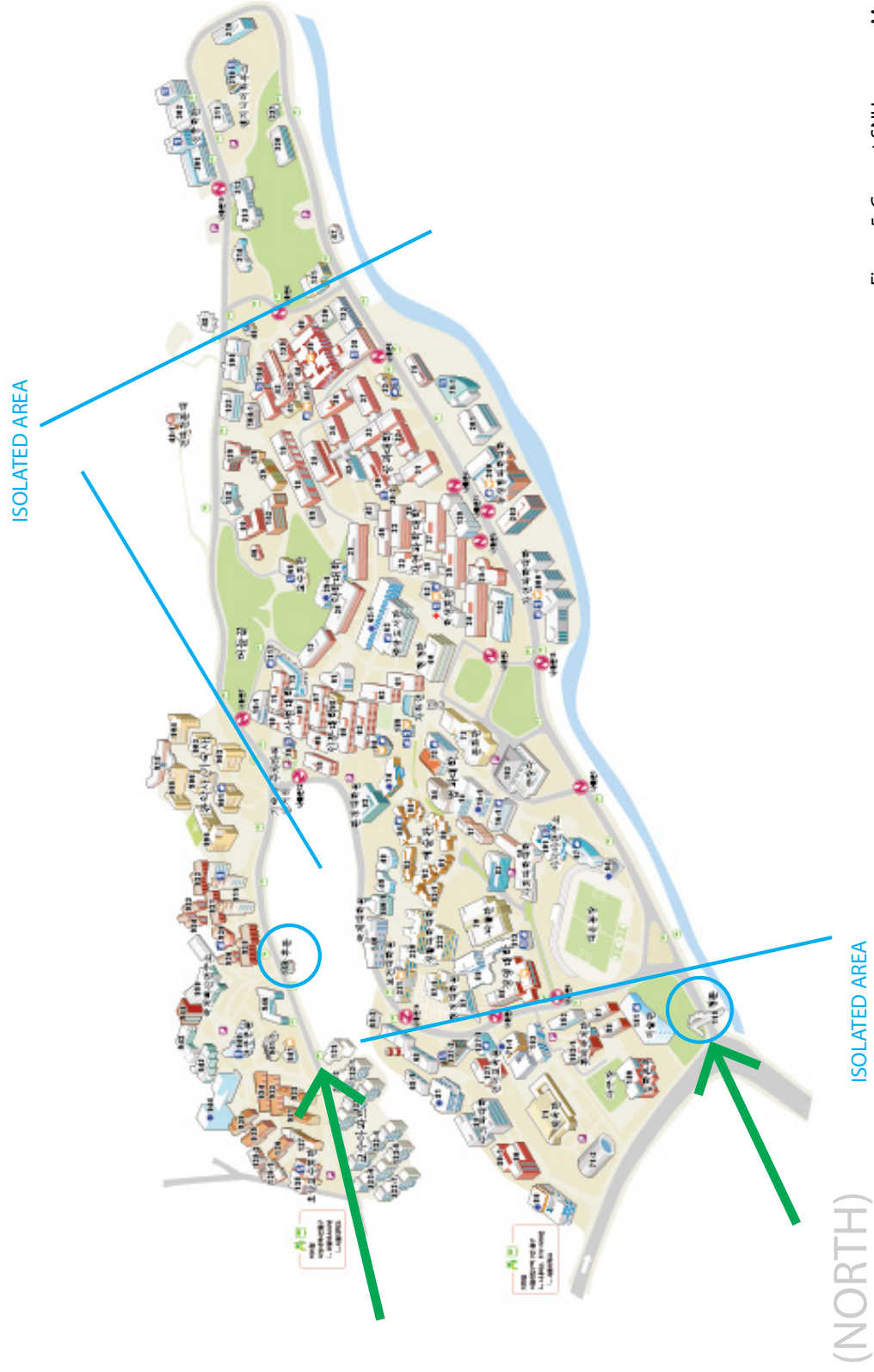


Figure 5. Current SNU campus Map.

Finally, the current existing signs on campus are not related with the main element, the campus map. Furthermore, they are not properly visible at many locations. The graphic code used is confusing. It can be seen in the following case:

This SNU signboard is located in one of the most important hotspot of Gwanak campus (Jahayon Pond). Confusing colours, shapes, excessive or absence of signs, and a complicated language of organization lead to inconsistency, weak legibility and lack of hierarchy in the current signs of the site. When the information is excessive the hierarchy is affected and the sign's graphic codes turn ambiguous. Consequently, the users make wrong decisions during the wayfinding performance; they get lost and feel mistrustful and insecure about the site and its signs.

Is this dashed line a shortcut across the hill?

What's the relation between the pink color of "C" and the ground's pink color?

Where am I?

Does "I" mean green area?



Figure 6. SNU signs. Own photographic record.

Where is the yellow on the map?

What the letters "B, H, C, I" mean?

What's the meaning of yellow with no number?

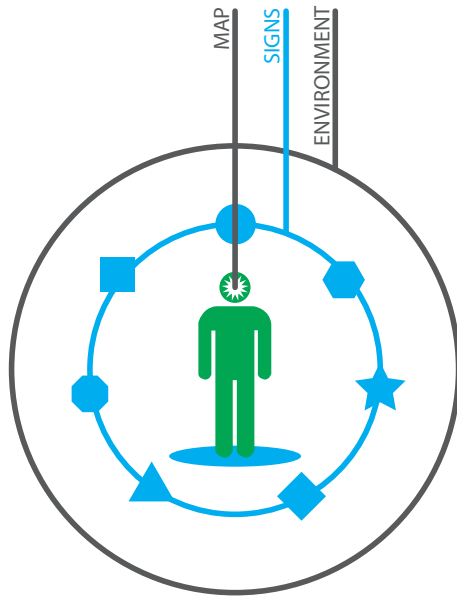


Figure 7. Mental map. Own elaboration.

In orientation system the sign could be an intermediary that connects and materializes map information with the real site. Virtual or printed map and finally a cognitive map that is a type of mental representation which serves an individual to acquire, code, store, recall, and decode information about the relative locations and attributes of phenomena in their everyday or metaphorical spatial environment (2013).⁹⁾ Maps are strengthened and synchronized with the existing signals on the site.

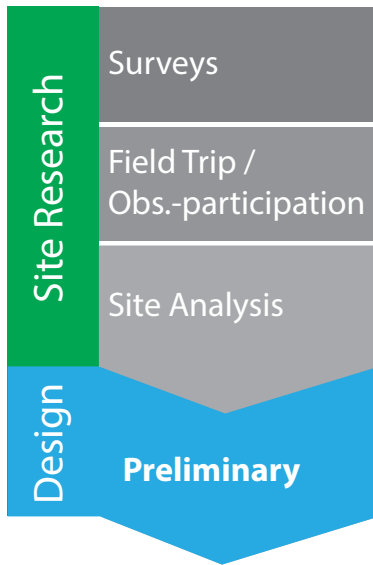
To synthesize, from my own experience as a designer, who lived on campus up to two years, and observing and studying the campus's landscape, I consider that the wayfinding orientation system at SNU Gwanak campus is not effective in finding the ways basically due to the following reasons:

- 1.** There is no information hierarchy
- 2.** There is no incorporated signage system
- 3.** It does not give a sense of place
- 4.** The orientation points are confusing in the main map
- 5.** It does not give references due to lack of landmarks
- 6.** Current signage is not really visible in the environment
- 7.** Color use is not efficient in terms of communication
- 8.** Main map does not consider the landscape features
- 9.** Main pedestrian routes are not recognizable
- 10.** The building numbering system is chaotic

9) Jiang, Bin (2013), "The image of the city out of the underlying scaling of city artifacts or locations". Annals of the Association of American Geographers. 103(6), 1552-1566.)

1.5 Research Method

Figure 8. Research Method Process.
Own elaboration.



Research methods are divided into two phases. The first phase consists in the following methods in order to define the problem in detail and then have a preliminary design:

1. Surveys: The first employed method are surveys to assess thoughts, opinions, and feelings from the experiences of the campus's users. The survey consists of a predetermined set of questions that is given to a sample. With the representative

sample, that is, one that is representative of the larger population of interest, one can describe the attitudes of the population from which the sample was drawn. Further, one can compare the attitudes of different populations. The sample selection is key as it allows one to generalize the findings from the sample to the population, which is the purpose of this research.

2. Field Trip and Field Observation-participation: The second method is the field trip and observation-participation within the site. Through these methods one can collect information from outside, in this case by self-analysis and the site's experiences addressed according to the survey results.

3. Site Analysis: Finally, several site analysis are developed as a vital step in the design process. It involves the evaluation of the site in relation to the development program, environment, adjacent properties, etc. The site analysis identifies constraints and opportunities. It forms the essential foundation for a cost-effective, environmentally sensitive, and rational approach to project development.¹⁰⁾

10) Floyd Zimmerman, Excerpt from The Architect's Handbook of Professional Practice, 13th edition 2000.

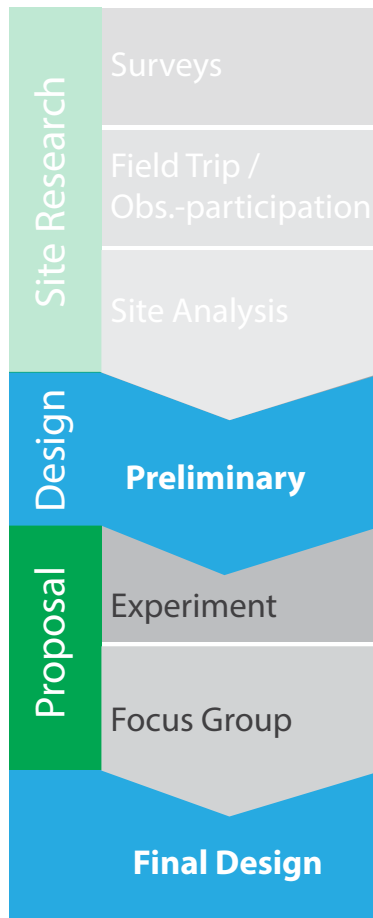


Figure 8. Research Method Process.
Own elaboration.

Once the preliminary design is developed, there is a second phase of research in order to test the design. The testing is done by means of an experiment and focus group.

1. Experiment: It is a procedure carried out with the objective of verifying, refuting, or establishing the validity of a hypothesis in this case to test the new wayfinding proposal.

2. Focus Group: This is a form of qualitative research in which a group of people are asked about their perceptions, opinions, beliefs, and attitudes towards a product, service, concept, advertisement, idea, or packaging. The aim is to gather an in-depth understanding of human behavior and the reasons that govern such behavior.

Chapter 2 Site Reaseach

2.1 Surveys

Up until now, the non-Korean perspective has not been sufficiently considered to determine design in relation to the ease of campus orientation, therefore the survey was developed in two phases. First, by the Internet for non-Korean population, and secondly, a paper version for Korean users. This scientific methodology seeks to identify, within a representative group, their use of space on campus.

The survey consists of nine questions expressed in English language (see Appendix, Page 74). Question types were diverse: scale questions type, multiple choice, and paragraph text, checkboxes and picture selections, and all its answers were required. The questions were designed to be responded during approximately 4 minutes and respondents were supported with additional instructions in case they needed them.¹¹⁾

The survey link was sent through the Facebook Group SNU International Students Association (SISA), which has 1,395 members.¹²⁾ The non-Korean respondents were contacted two times via on line: April 9, Wednesday at 4:26 pm and April 13, Sunday at 3:04 pm, 2014. On the other hand, Korean respondents were

11) How to Frame and Explain the Survey Data in your Honors Thesis Chase H. Harrison Ph.D. Program on Survey Research, Harvard University.

12) <https://www.facebook.com/groups/sisa2011/>

contacted around the University Library directly in person. For both cases 39 people were asked to answer the survey, having a total of 78 respondents.

2.1.1 Objectives

1. To know the profile of the users related to their familiarity with the campus
2. To know the proficiency in Korean language for non-Korean users to have an idea about their communication skills to solve the problem of getting lost
3. To identify the most visited buildings and areas
4. To become acquainted more in detail about the reasons of getting lost
5. To know how they usually try to solve the problems
6. To establish where the most critical points on campus are
7. To learn about other important opinions and feelings from users
8. To compare non-Korean and Korean users results and perceptions

<h2>User's Profile</h2> <p>Please select your level of Korean Language How long have you been studying on SNU campus?</p>	<h2>User's Behavior</h2> <p>List your 3 most visited buildings on campus</p>
<h2>Reasons</h2> <p>Why do you get lost on SNU campus?</p>	<h2>Issue</h2> <p>How do you usually find the directions on Campus when you do not know the exact location? What are the difficulties of finding the way?</p>
<h2>Critical Points</h2> <p>According to the map, please choose all the points where you usually get lost or confused</p>	<h2>Suggestions</h2> <p>Which is the most efficient way to find directions on SNU campus? Where you think signs are necessary?</p>

Figure 9. Survey structure. Own elaboration.

2.1.2 Findings

A. User's Profile

Non - Koreans:

The level of understanding Korean language for non - korean speakers considering speaking, reading, and listening skills is the lowest one. Their familiarity with the SNU Gwanak campus in terms of period of time is amply high. 42% of responders have been studying at SNU campus for more than 3 years.

Koreans:

Korean users show a similar familiarity with SNU campus, 38% of responders have been studying for more than 3 years at Gwanak campus.

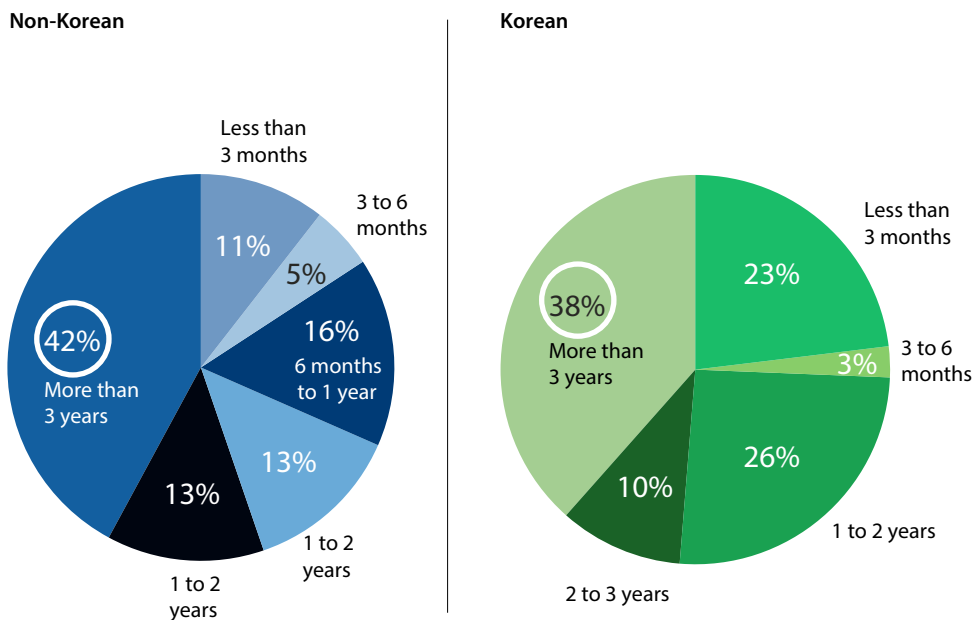


Figure 10. Graphs. Own elaboration.

B. User's Behavior

Non - Koreans:

The most frequent destination is measured by mapping. Non - Korean's behavior is represented by red dots, which are concentrated in the dormitory area, Gwanak-sa Graduate house. More than 50% of responders live within the site and their starting point is usually those 900 to 906 buildings. At these points users start to flow in several directions to get into the inner circle campus. Another relevant destinations to remark are the building 63, which is the Student Center and right next to it building the 62, the University Library. Both located in the center of campus.

Koreans:

Koreans and non - Koreans tend to concentrate where public facilities such as restaurants, cafes and banks are. University Library and student centre building can be considered among the most visited places. Unlike non - Koreans, it is possible to assume that the Korean group lives out off campus, therefore their starting point is undefined but it is expectable that they start the wayfinding process at west and east campus's access.

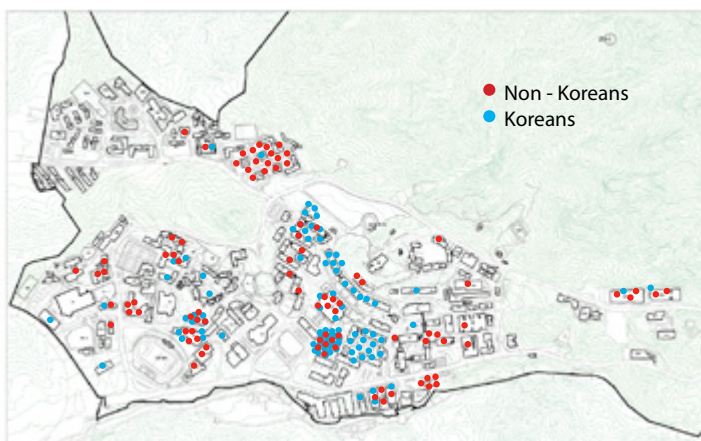


Figure 11. SNU masterplan. Both Koreans and Non - Korean's most visited building mapping.

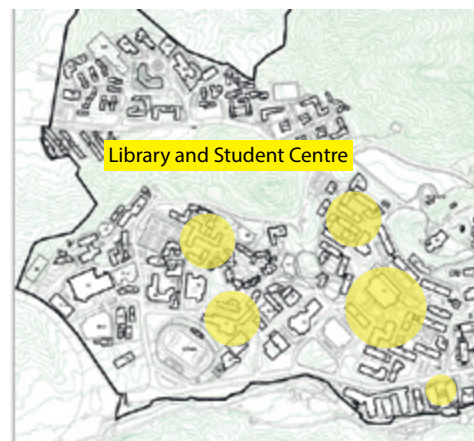


Figure 12. Common areas mapping.

C. About the Reasons of Getting Lost

Both Korean and non - Koreans recognize as a main reason of getting lost or confused at SNU campus, the lack of signs and information within the site. Followed by a considerable percentage of respondents that consider that landmarks of campus are not clear. Landmarks are not properly expressed in the current orientation system in both signs and campus map, therefore, to make connections between site reality and mind maps is time consuming and an annoying process.

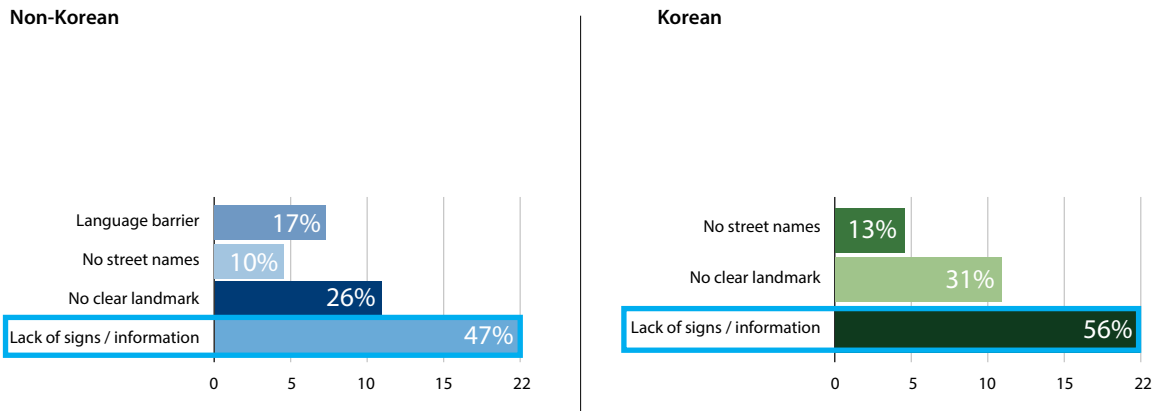


Figure 13. Graphs. Own elaboration.

D. Issue

Non - Koreans:

SNU maps are they key to find the directions when the users do not know the exact location. Half of respondents are depending on SNU maps, although are not completely synchronized with the landscape and architecture's reality. However, they usually do not follow the current site's signs to find their way.

Map's difficulties refer to an unclear map design that is a time consuming process to understand. Also, the numbering system problem, which is not logic and due to the fast changes experimented by the campus, the map, buildings and its numbers are not updated or sync. Moreover, numbers on buildings are not visible from certain angles. Difficulties by using maps applications refer to the language barrier. (Figure 16)

Koreans:

Half of respondents tend to use map apps to find their way. There are available advanced Korean map apps, but same thing, signage are not synchronized with map app information, and practically they are not following current signs.

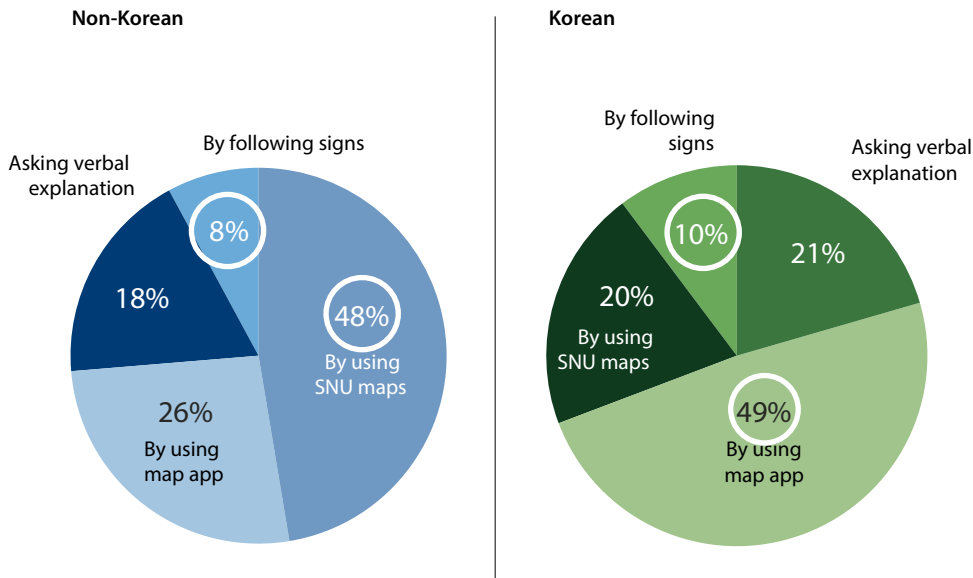


Figure 14. Graphs. Own elaboration.

Non - Koreans / Koreans

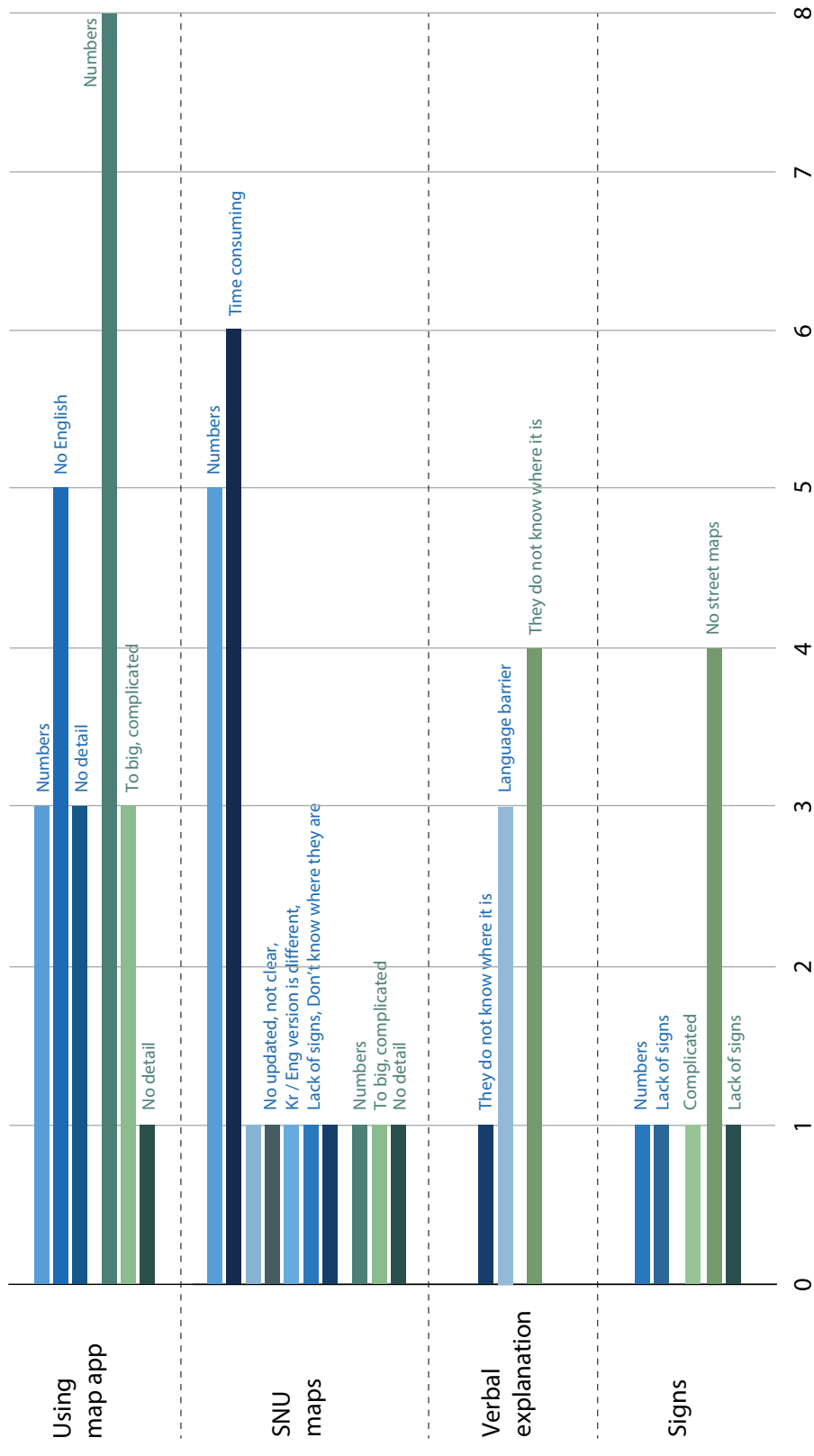
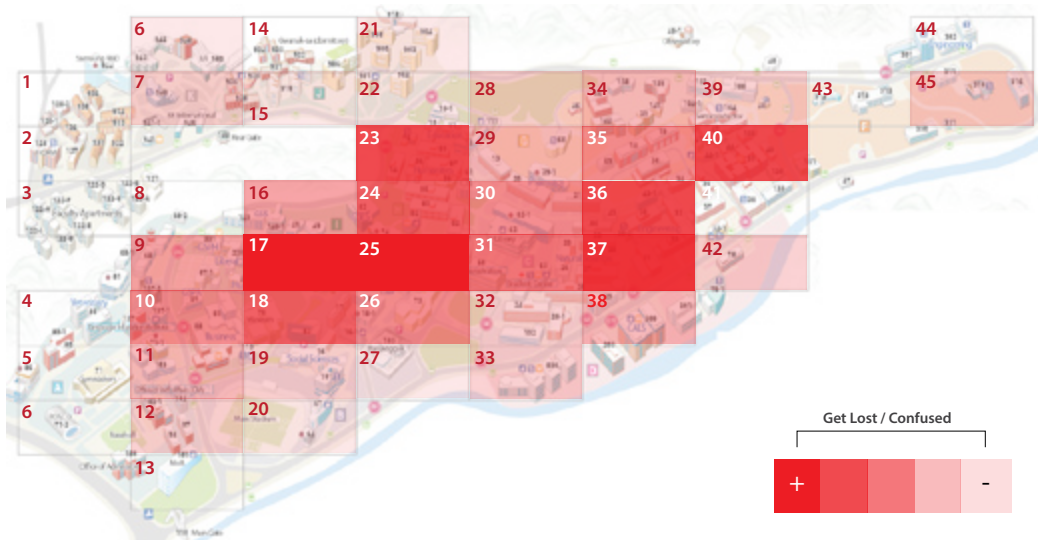


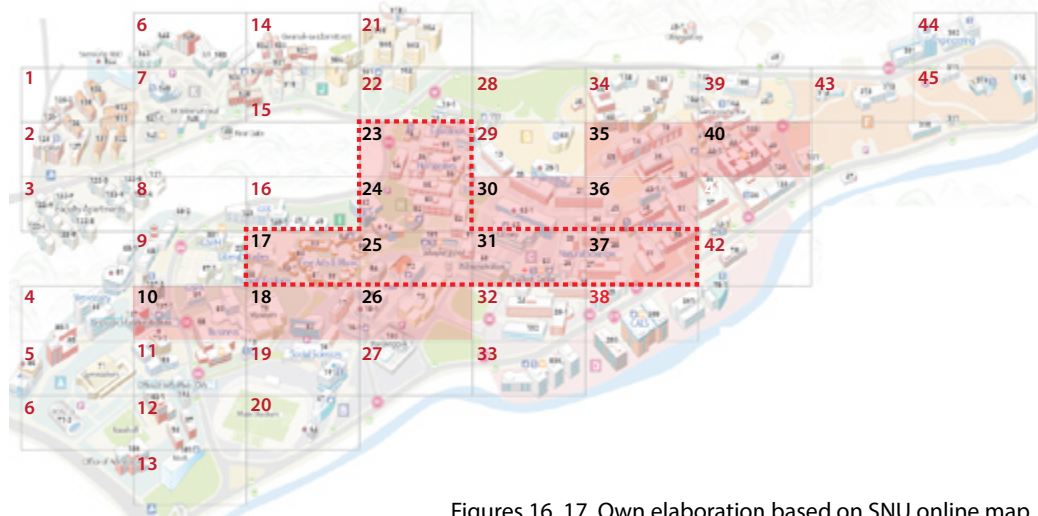
Figure 15. Graph. Own elaboration.

E. Critical Points

The critical points related to confused areas are expressed by red colour which is concentrated in the centre of the site, forming a horizontal and vertical line that build a cross or “X” shape after interpreting the areas relating them with the specific paths. The most confused point are stronger close to the main library area. At this point the confused paths are expanded from here in all directions around. The mapping information was reinterpreted when it was transferred from the “familiar online SNU map” to the SNU master plan map, as it is shown in the following process.



The level of getting lost is represented by the red colour and its opacity from 10% to 100% represents the weakest and strongest possibility of getting lost respectively.



Figures 16, 17. Own elaboration based on SNU online map.

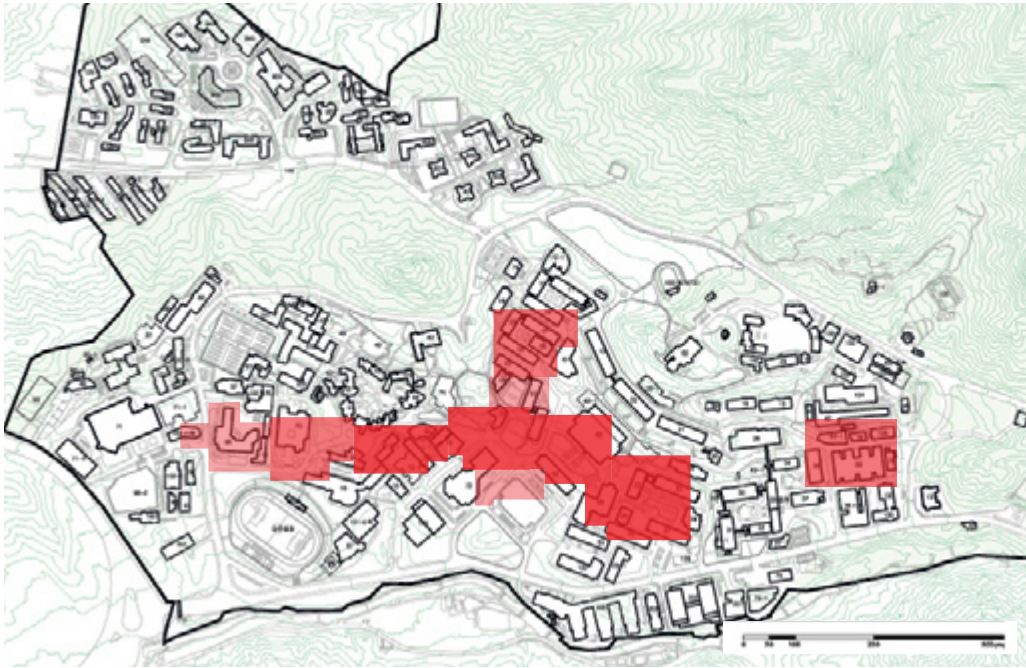


Figure 18. Own elaboration based on SNU master plan map.

F. Suggestions

Maps and signs are the most efficient way to find directions on SNU campus according to respondents. But in the wayfinding context the signage must include whole map systems in the busy points of the paths or most confused areas. This is essential to know where we are and where to go, not only where the specific points are. Also for those who do not have printed maps with them all the time this sign-map complement is needed. Another feelings, perceptions and opinions from respondents are, for instance, indicators before going up with a previous specification about what is upstairs is needed as well as the number in each visible side of the buildings.

2.1.3 Conclusions

For non-Korean users there is a language barrier when they need to interpret oral instructions from non-English speakers or Korean signs. Korean language is classified as a language isolate which means, in the absolute sense, is a natural language with no demonstrable genealogical (or “genetic”) relationship with other languages,¹³⁾ it is impossible to relate it with the user’s background language to comprehend the oral instructions. Moreover, signs and campus map around, naturally are expressed primarily in Korean language followed sometimes or not by an English version in a lower visibility.

In general, all users have enough familiarization with the site but they still have difficulties when they need to find a new destination. However, through their site experience for more than 2 years, they are capable to recognize the site’s landscape features. And both, Korean and non-Korean users have similar behavior. University library and its surroundings is considered the main zone, thus here is where the most common visited buildings are located. The getting lost probabilities is higher at this point than other locations. A difference between both users is the starting point navigation. Whereas, non-Korean users start from dormitory area, usually Koreans start from main bus stops.

From user’s perception the main wayfinding problem is the numbering building system. Aside its illogical order, it is not enough visible, “they must be visible from every building side”. On the other hand, maps do not show landmarks to orient and locate themselves in the real space, and information is not synch with the reality. The visual landmarks and logical transit pathways assist people in reaching their destinations. Psychologically, these design elements provide a sense of ease and comfort.¹⁴⁾ That do not appear on the map not only complicates the navigation, also generates negative perceptions about the site.

13) Song, Jae Jung (2005) “The Korean language: structure, use and context” Routledge, p. 15

14) Kaplan, R., Kaplan, S., Ryan, R.L., 1998. *With People in Mind: Design and Management of Everyday Nature*. Island Press, Washington, DC.

2.2 Field Trip and Field Observation-participation

Based on the survey results, particularly, user’s behavior findings (see page 15), the field trip was organized in two phases:

1. April 4, Friday 12:00

2. April 9, Wednesday 13:00

Objectives:

- 1. To experience the most visited areas that have a potential site’s core characteristics
- 2. To review the existing paths and identify its main routes
- 3. To research the existing signs conditions

- 1. To recognize the pattern of the main route that connects dormitories with inside campus
- 2. To research the existing signs conditions

- April 4, Friday 12:00
- April 9, Wednesday 13:00

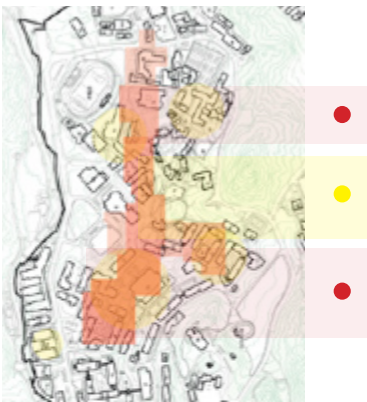
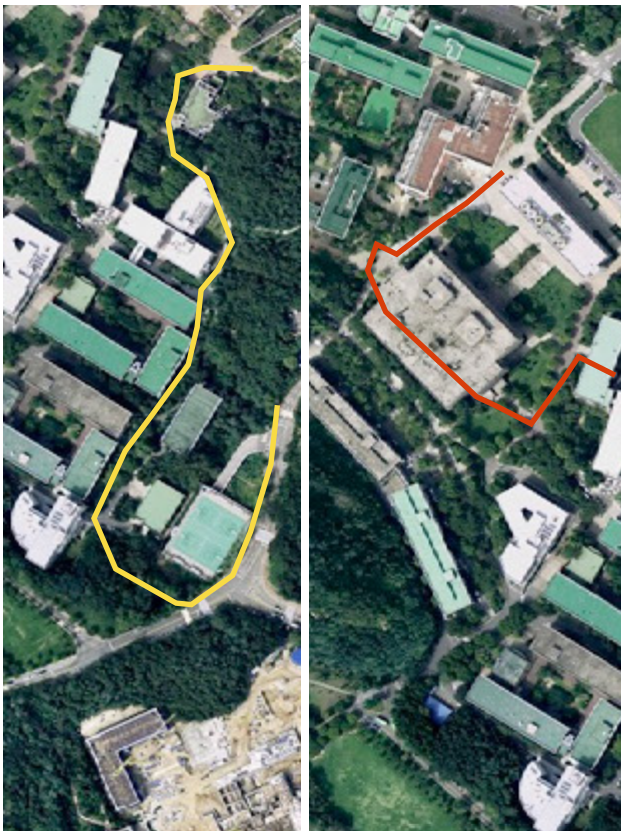


Figure 19. Own elaboration



Figures 20, 21. naver.com

2.2.1 Sign Findings

A. No Signs:

Absence of signs in places such as open spaces with a wide flat with no information about surroundings (1), the node in the main pedestrian route intersection (2), the limited light in a type of tunnel that cross from zone to zone through the University Library building (3), and a straight path that does not indicate what is next once we go upstairs / downstairs or in a lateral route alternative (4).

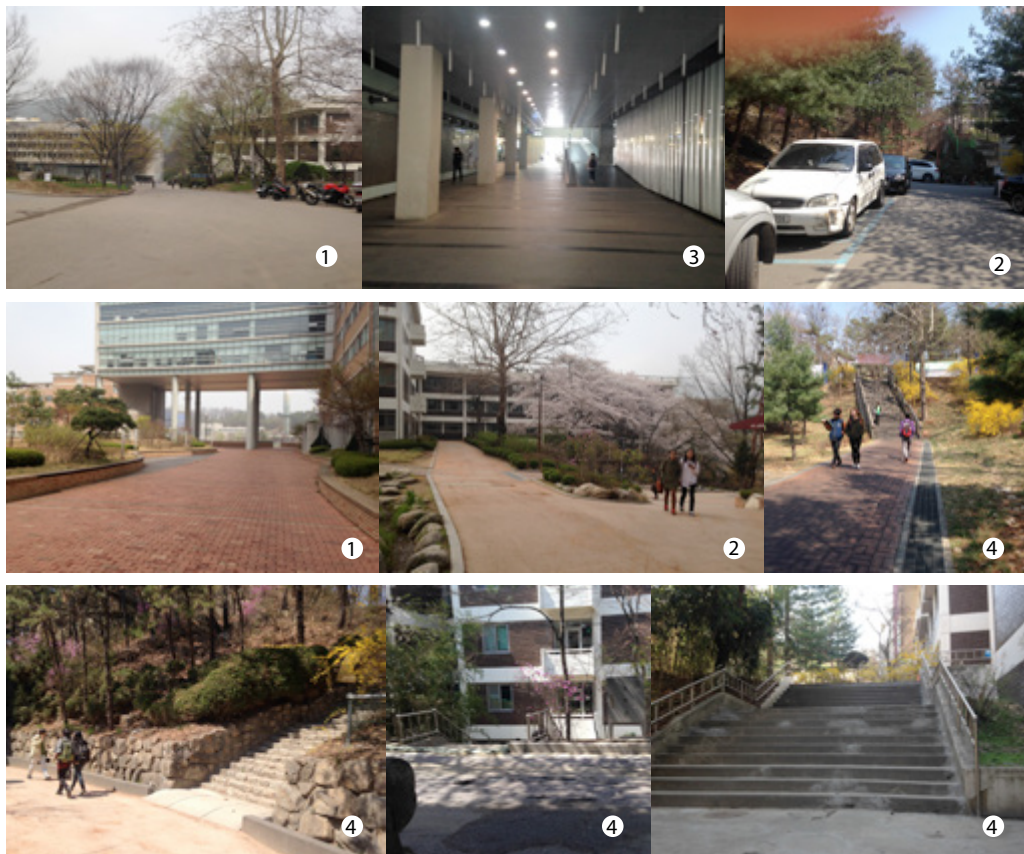


Figure 22. SNU campus. Own photographic record

B. Current Signs System:



Main campus map

1

The current sign system hierarchy is formed by 3 different levels, from general to specific criteria. (1) Main campus map, (2) Zone maps, and (3) Building signs. Main campus map is visible next to the main gate at the entrance. The no background map with an inclination based on the main gate position is the first approach to the site.



Zone map



2

Zone map and signs are divided into 2 types. Both types usually show the zone map at different scales. The big-scale map is expressed by new sign elements that do not follow the current designs codes, losing sense of unity. The small-scale map visibility is not effective due to its wrong location and layout.



Surrounding Panel



2

The last group is the building information panel and its specific building number displayed in one or two outside walls.



Building Panel



3



Building Number



3

Figure 23. SNU campus signs. Own photographic record

C. Signs Location

The sign location varies depending on the routes and landscape features. The most representative types are located in intersection of 3 or more different ways (1), in slopes (2)(4), plain or with vegetation or flat areas with or without vegetation (3).



Figure 24. SNU campus signs. Own photographic record

D. Other Signs:

It has been revealed the existence of other signs that disturb the graphic unity within the environment, such as corporate signs (1), recycling spot (2), bus stops (3), and gates (4). Although they are not aligned to the dominant graphic system of the space, they are useful for orientation in the way such as natural landmarks like the pond (7), or man-made landmarks as the main gate (5) or sculptures (6).



Figure 25. SNU campus signs. Own photographic record

2.2.2 Route Findings

A. Pedestrian Flowing:

Pedestrians are following the route patron. Features such as the design and materiality of the ground, the vegetation around, the width of routes and its logic directions are factors that determine the behavior of users on the chosen route to reach destinations. According to the observation on the site and previous analysis (see page 15), users prefer the more clearly established routes within the existing route network. These are found in mountain foot around the campus (Route 1), and the wider routes that go towards the center of the site crossing the University library (Route 2).

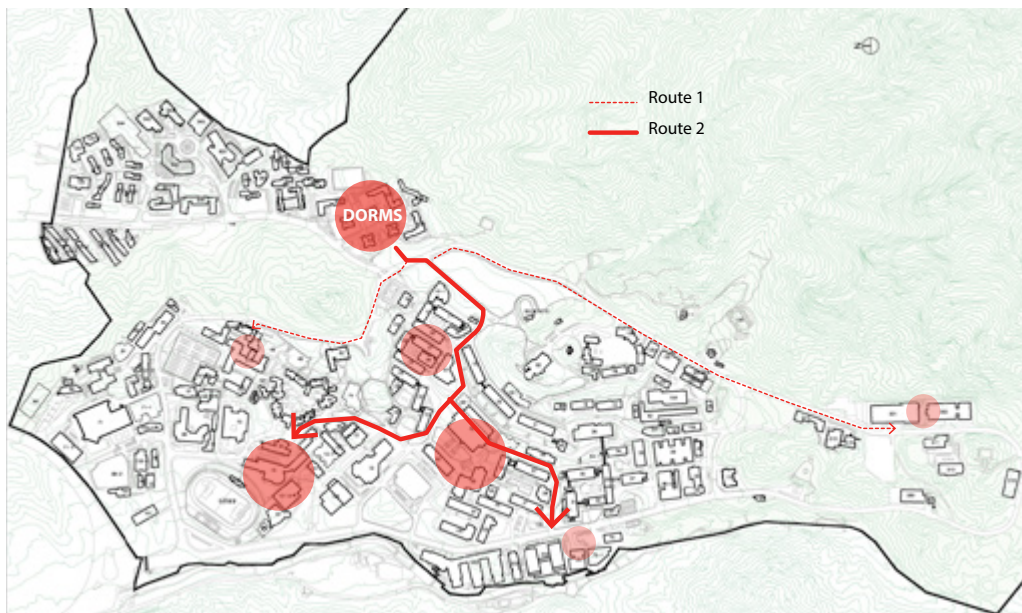


Figure 26. Expected route from dormitory to main points.

B. Main Routes:

The main “circle route” that surround the campus contains the path network. Along this route there are 3 especially active bus stops. These bus stops are inter-located, upholding certain distance between them and responding to different orientation points. The bus stops are busy access to the principal pedestrian routes that makes flow the people toward its centre.



Fig 27. First approach to the main routes identification.

2.2.3 Conclusions

People flow with the crowd and the crowd flows through dominant, bold or more accentuated paths. Those paths are strong and tend to be unified in terms of materiality but ground's material and textures are not continuous on campus. They are interrupted by different design components and also the path width is constantly varying. However, there is a natural rhythm to walk up and down that made the users choose the dominant route, which are located at different points to reach the University library, which is the campus core.

In terms of signs, several inconsistencies are found. (1) Different graphic codes and different structures for the same purpose. This wrong use of the sign system is extended to bus stops signs along the circle campus route, and there are differences in the zone signboards. Dormitory zone signboard is completely different to all the signage system. Signs must be consistent in its features for a good design and function.



Figure 28. SNU campus signs. Own photographic record

(2) Signs installations need maintenance from time to time, plus it should avoids the excesses. Some signs covered by vegetation cause low visibility therefore not working. (3) The layout of surrounding building panels is not a well-done design. The campus map located in the lower place is not visible and it is covered by vegetation.

Users do not pay attention on zone signs, they seemed useless. The current family of sign is not working as a system. Signs are under different codes and the sign components are not complement each other. There is no strategy according to the landscape.

2.3 Site Analysis

Landscape is a system that is defined by geomorphology¹⁵⁾, that studies the landforms and its process. Through landscape is possible to predict changes and nature's behaviors, thus by analyzing the landscape, design, planning and management are developed.

Gwanak campus is a height land formation, surrounded by mountains, facing the Gwanak Mountain that is pointing the South. Therefore, Gwanak campus is a valley but is not a flat valley by definition. It has complex geography and landscape features that formed different types of landscape within the valley.

In order to understand the SNU campus complexity for a wayfinding design based on the landscape, site analysis are developed with the following objectives:

1. Recognize campus access and axis
2. Find the topographical differences of the site
3. Review the water behavior
4. Identify the landscape types by zoning
5. Research the transport-landscape relationship and the wayfinding impact
6. Identify and classify the existing route network
7. Establish an approximate pedestrian route hierarchy

15) Wybe Kuitert, The nature of urban Seoul: potential vegetation derived from the soil map. 2013



Figure 29. SNU campus access diagram.
Own elaboration.

Campus Axis

The site has two main axis that intersect at the University Library. In this sense, University Library's strategic location seems to be thought in order to be at the center of the site, to get there easily no matter in which campus's zone the users are located.

2.3.1 Campus Access

Accesses could be classified by Off and On Campus. Official campus access are the main and back gate (Off campus). Rather than pedestrian access they are more car and bus-oriented. Main gate offers three navigation alternatives whereas back gate offers only one. Alternative pedestrian access next to the main gate are shortcuts and it is a saving time option. On campus accesses are pedestrian-oriented. The most active are located at both sides of the site centre allowing quick access to the University library.



Figure 30. SNU campus axis diagram. Own elaboration.

2.3.2 Topography

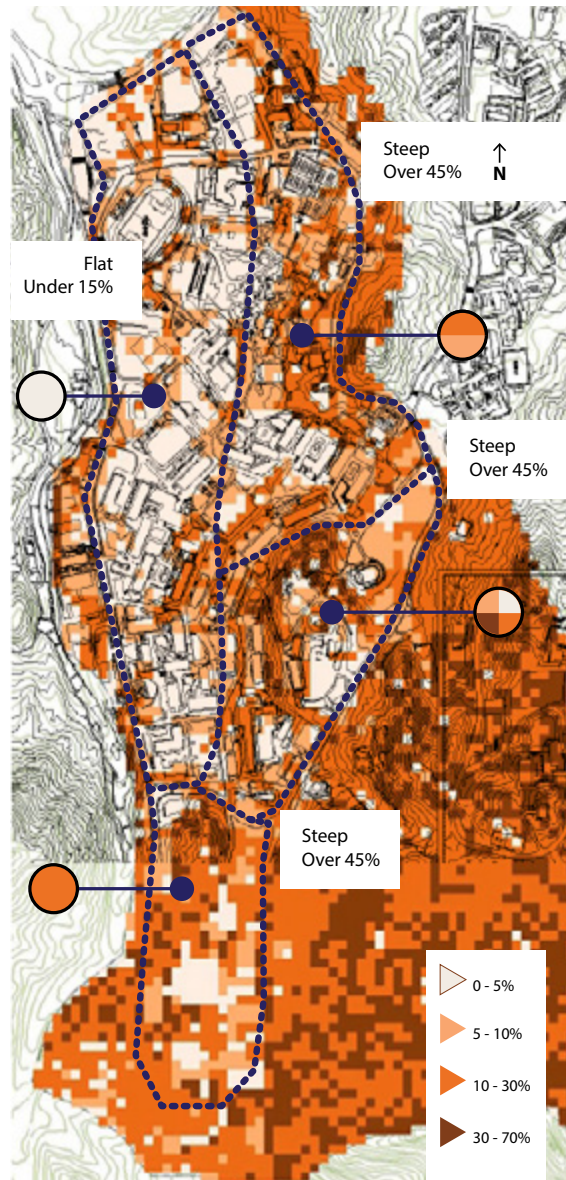


Figure 31. SNU campus Topography¹⁶⁾

This analysis shows the topography levels expressed by 4 colors from flat to steep over. From the topography view the campus is quite diverse: The north tends to be flat whereas the south the mountain landscape is accentuated. West side tends to be flat when East side is a hill's slope landscape.

Considering the clear topography differences the campus surface could be classified into 4 types: Flat, Mountain, Hill's slope and Mix type, as shown in the diagram.

16) Wybe Kuitert, Studio Site Design, Seoul National University, Graduate School of Environmental Studies. 2012 SNU Entrance: Site Analysis, Hur Yoonah, Shrinath Wijethunga, Park Kye Jeong, Kim Shin Sung.

2.3.3 Water

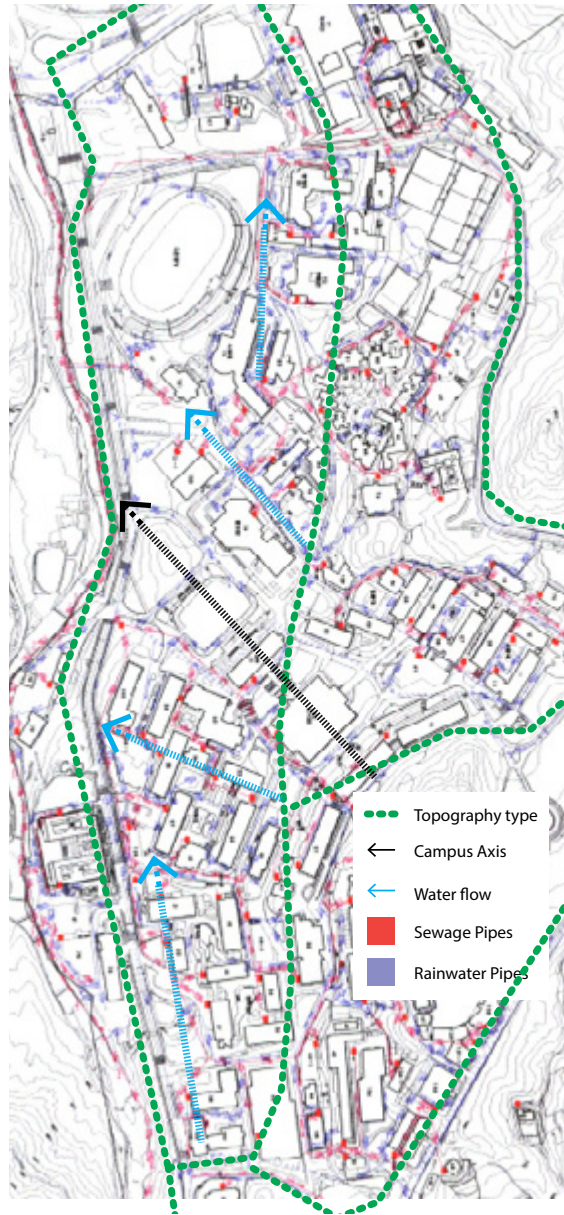


Figure 32. SNU campus Water¹⁷⁾

The water movement, the direction that flows reflects the type of landscape. In this respect, analyzing the topography, axis, and the diagram water simultaneously, it is possible to observe different rhythms in the water flow on the flat surface. This accounts for the different water behavior on both sides of the axis dividing here this landscape type into two. The north flat side is following axis rhythm whereas the south flat side is subtle different, nearly perpendicular to the north.

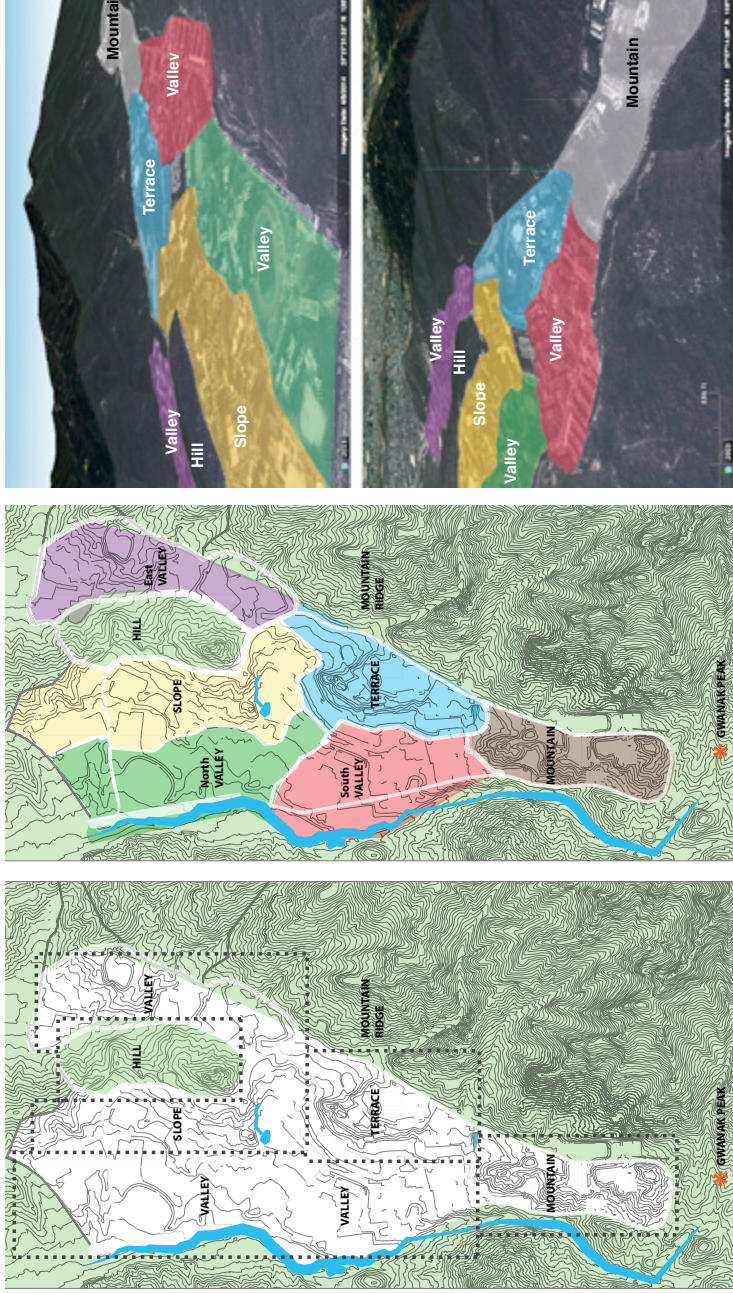
On the other hand, Non-flat landscape types have water flow that follows its complex geography, which does not make possible to determine the flow pattern.

17) Wybe Kuitert, Studio Site Design, Seoul National University, Graduate School of Environmental Studies. 2012 SNU Entrance: Site Analysis, Hur Yoonah, Shrinath Wijethunga, Park Kye Jeong, Kim Shin Sung.

2.3.4 Zoning

The landscape of foothills and valleys is found below the Mountain landscape, in lower elevations. It is defined by ridges and watersheds in between.¹⁸⁾ SNU campus landscape is predominantly a valley, Gwanak Mountain valley. Through the water and topography analysis (page 32, 33) different landscape types are recognized. Now, by zoning, four type of landscapes are identified within the

whole campus. Valley, Hill's Slope, Terrace, and Mountain landscape. Valley type is dominant finding North and South valley, and the East valley, isolated by the hill. Every landscape has its own characteristics regarding to soil, vegetation, light, topography, water and so on.



Figures 33,34. Google Earth

Figures 35,36. Google Earth

18) Wybe Kuitert, The nature of urban Seoul: potential vegetation derived from the soil map. 2013



Figure 37. SNU campus landscapes. Own photographic record

2.3.5 Public Transport Analysis

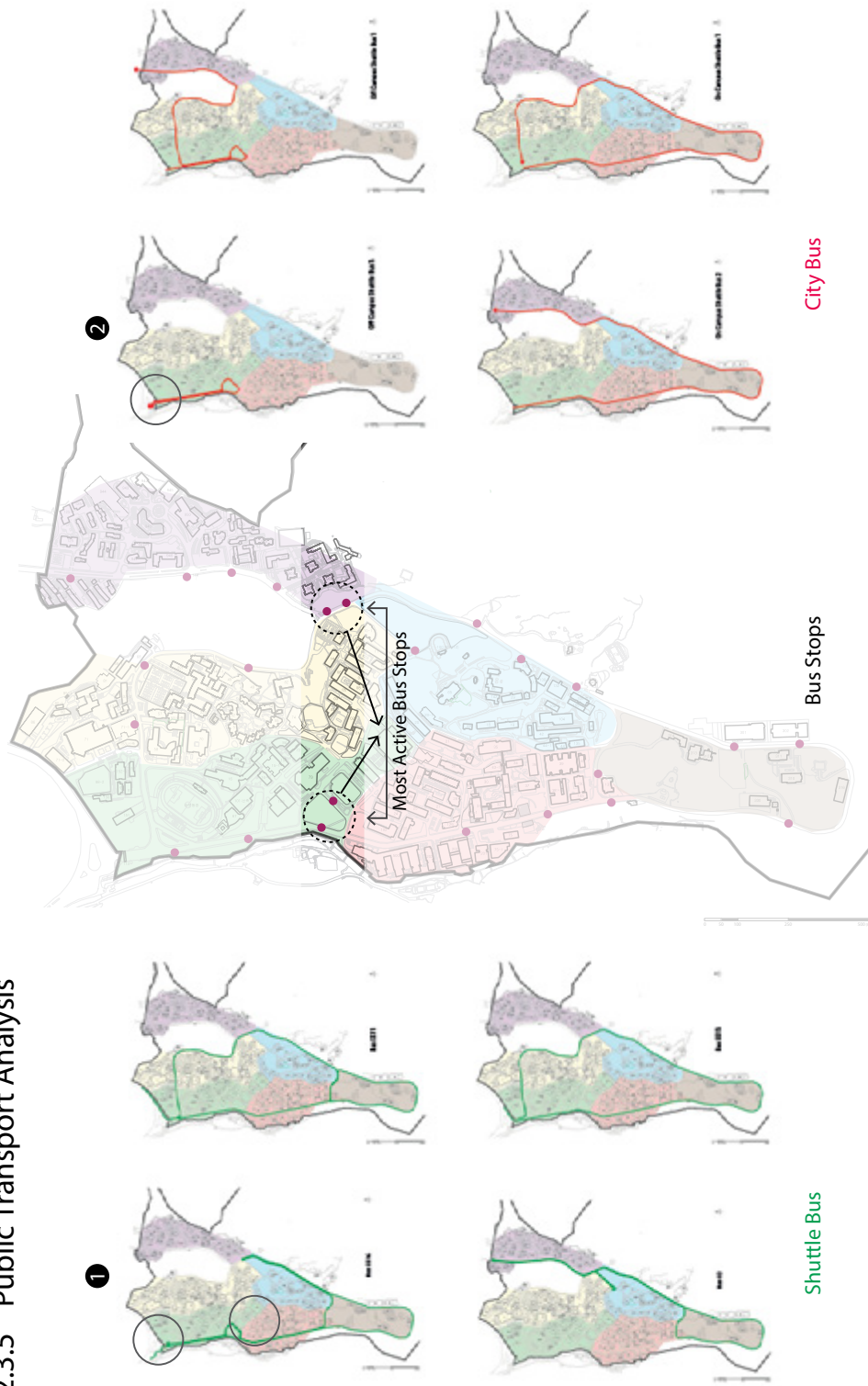


Figure 38. SNU campus transportation diagram. Own elaboration.

Public Transportation network consist on city buses (red lines) and shuttle buses (green lines). The transportation route is around the campus in the circle line that follows the contour line given by the topography and it contains the landscape types within the whole valley.

The transport line makes subtle interventions within campus's landscape. The route line surrounds the slight hill to get the active bus stops (page 36 diagrams 1, 2). It intervenes also, in the most isolated landscape type zone in the Southside. Mountain landscape is separated and connected at the same time to the whole campus by the transportation line.

Transportation system has an important impact in the wayfinding performance since pedestrians get into the Gwanak campus by buses. Among all of the bus stops, the most active stops are standing out in the center, at both sides, east and west (page 36). Thus, these stops have the role of bringing people directly to the main pedestrian access that goes to the University library firstly.

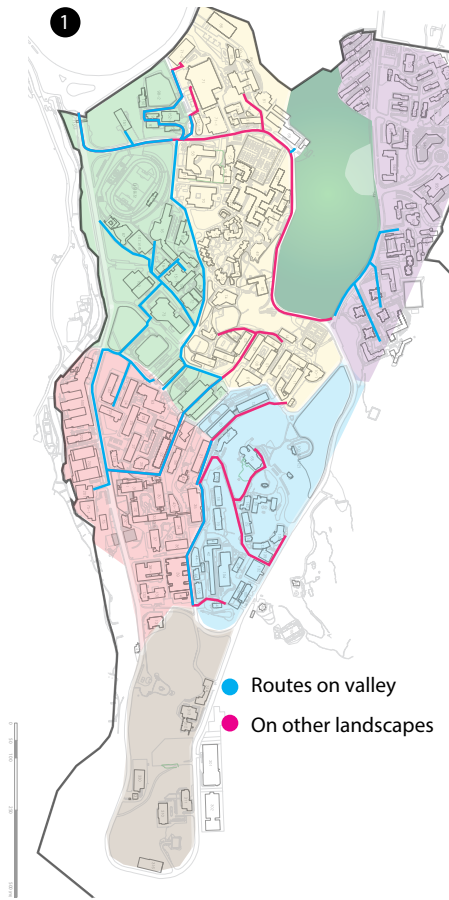


Figure 39. SNU campus wheelchair friendly routes diagram. Own elaboration.

2. Coexisting Car Routes: On campus, car or transport routes coexist with pedestrian routes basically where the main bus stop area is and where the transport line intervenes entering the campus in the south area. From mountain landscape and crossing along the terrace landscape zone cars are allowed to transit. At the same time, this route is a main pedestrian route to go through.

2.3.6 Route Types

To start to design the pedestrian network and its hierarchy is necessary to identify its programs. The route network has different purposes not only pedestrian purpose. Wheelchair-friendly and car routes that coexist with pedestrians are identified in certain landscape types areas.

1. Wheelchair Friendly Routes: Within the route network some paths are considered wheelchair friendly routes due to its gentle slope. Those routes are in cyan and purple color. Most of them are located in the valley (cyan color lines). Valley's geography is quite flat, therefore is available for wheelchair users.

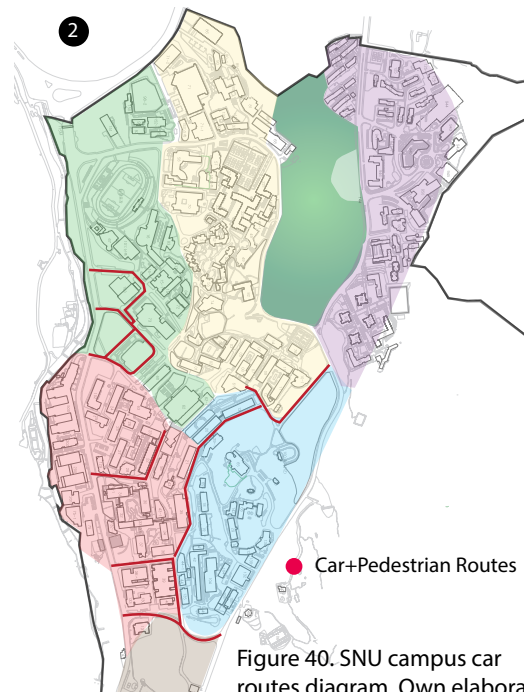


Figure 40. SNU campus car routes diagram. Own elaboration.

2.3.7 Pedestrian Hierarchy Routes

Within the campus there is a complicated pedestrian path network. It is complicated as its geography. Beside shortcuts and random paths, an approximate pedestrian route hierarchy can be established. According to the diagram, green thick line is the main route that flows along and across the campus's width. This route connect all the zones and makes borders of them as well. In the second level of hierarchy the blue lines connects dormitory valley > hill > south valley > terrace and mountain, in a East - South curve axis shape. Finally, the small paths with a predominant direction that varies according to the landscape type and passing in between the buildings; converge in the main routes.

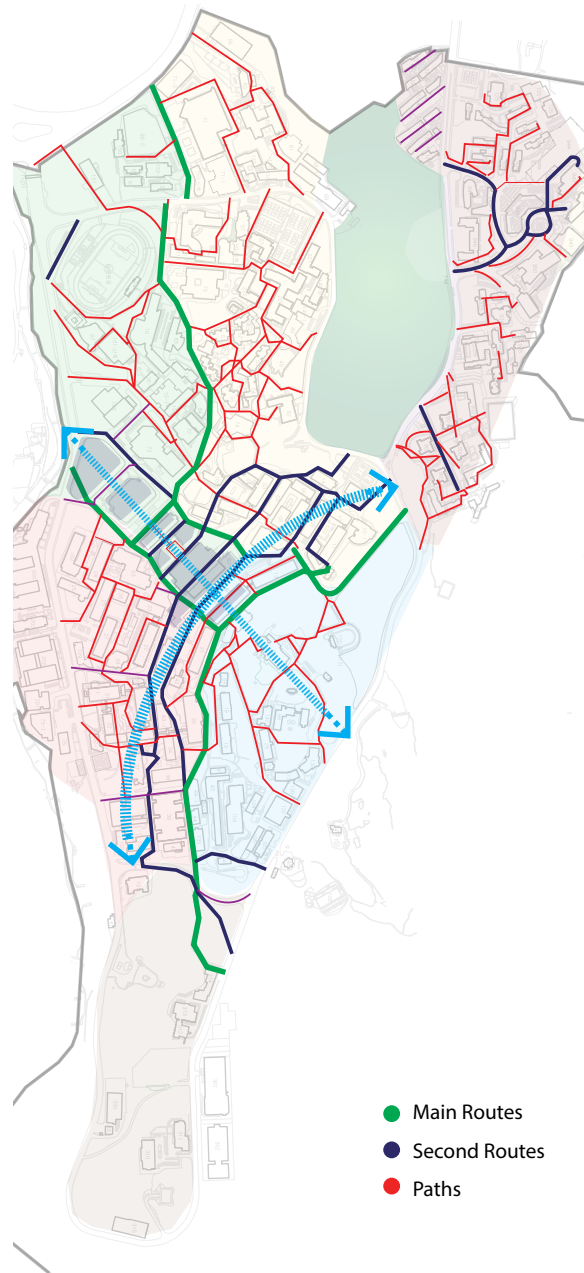


Figure 41. SNU campus hierarchy routes.
Own elaboration.

2.3.8 Conclusions

Site analysis are complemented with the previous research methods in order to obtain the following findings:

1. Landscape type was defined through topography, water and zoning analysis. Four landscape types are recognized: Hill's slope, valley, terrace and mountain. In term of area, valley is the most prevalent landscape type. For a better organization, valleys are divided into three types: North valley, South Valley and Dormitory valley, which is naturally separated by a hill, and isolated from the "whole campus". Thus, a total of six zones have been defined. The zoning findings by landscape types respond to topography differences and the water rhythm.

2. Access analysis intends to clarify the orientation of the campus navigation from a pedestrian view. Different access for different purposes is recognized. Differences depends on users such us buses, shortcut users and general pedestrians. The most active pedestrian access (on campus access) are next to bus stops. Those are strategically located in order to navigate the site from its center to any direction but focuses on the University library which is the campus's core.

3. An approximate pedestrian route network with a clear hierarchy was developed according to field trip, surveys, route types and the transport-landscape relationship and he wayfinding impacts analysis. Main pedestrian routes start at North, South, West and East campus points. These routes go along the site through its core. They shape a extended route network structure that permit the flowing of pedestrians. They follow the landscape features limiting the areas and connecting them each other.

Chapter 3 Preliminary Design

The current wayfinding system of SNU has been designed from a user's view that starts the campus navigation from the main gate, distorting the universal cardinal orientation points, however, the starting navigation is diverse (4.2.2 Findings about Routes. Pages 27, 28). Therefore, the focus should be on the campus core, according to the campus planning, and the landscape architecture. This is the University Library place, right in the center (Field trip conclusions, page 27; Site analysis conclusions, Page 40).

As in human body's circulation system the hierarchy of veins ensure the proper flow of the blood cells to the heart and all the basic organs, in the same way, the University campus or any similar urban planning design should ensure the proper wayfinding to let the users find their desired destinations with no fear or anxiety. In this sense, the preliminary wayfinding proposal was designed under the structure given by pedestrian route system.

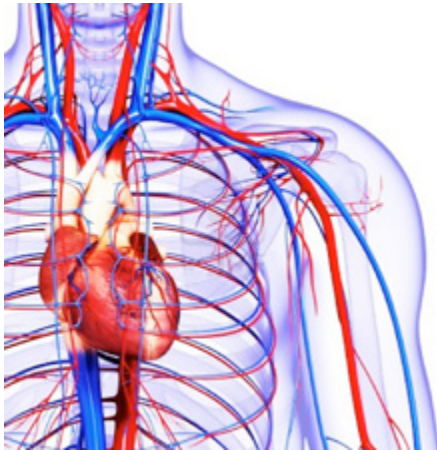


Figure 42. Human Body Circulation System

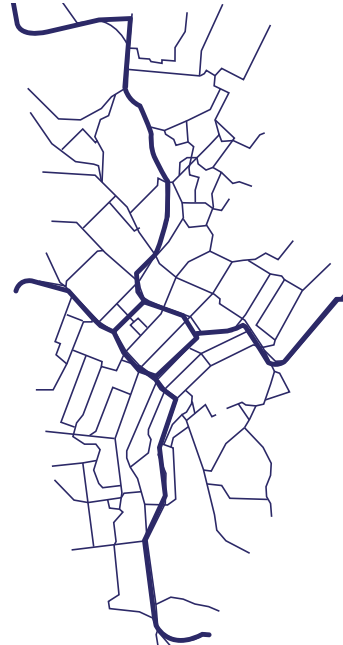


Figure 43. SNU pedestrian route structure. Own elaboration.

3.1 Design Strategy

The design strategies axis are under the following criterias:

1. Four different types (plus two subdivisions) of landscape found on its landscape structure to organize the wayfinding performance (Site analysis: 4.3.4 Zoning, Page 34)
2. A strong approximate hierarchy of pathways on three levels (Site analysis: 4.3.7 Pedestrian Hierarchy Routes, Page 39)
3. A logical navigation from the core under the universal compass points (Site analysis: Conclusions, Page 40; campus Access Page 3. Problem Statement, Page 07)

The campus graphic image is synchronized with other wayfinding tools, such as smartphone map applications that according to the survey an important percentage of users use to advise with (Page 18). In this regard, confusion is avoided and the information provided to users is supported by the physical signs.

By using map app

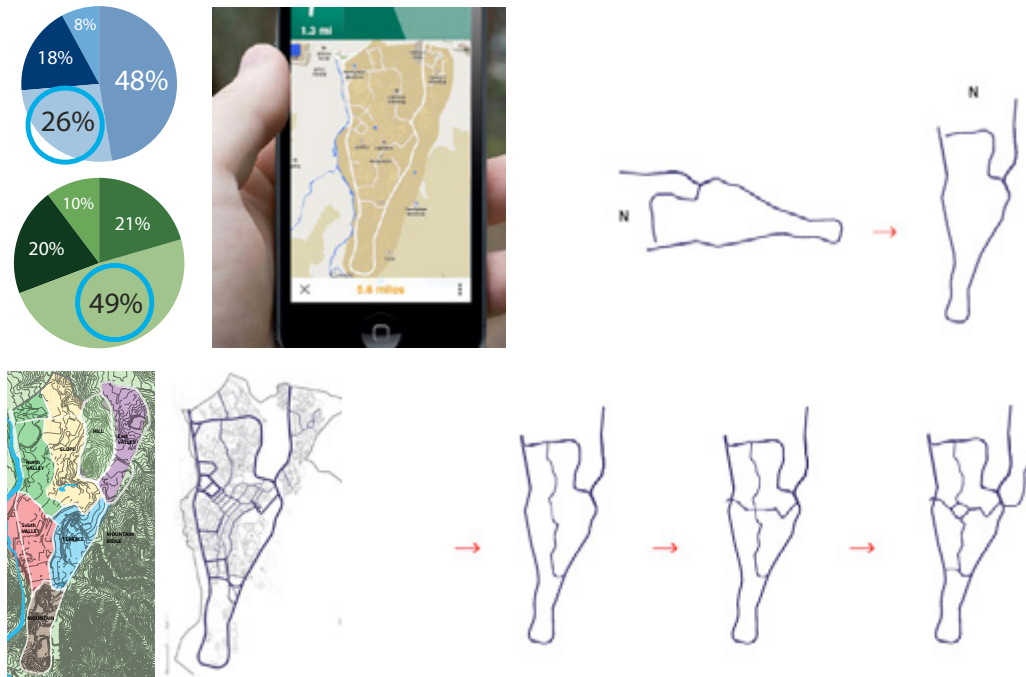


Figure 44. Design Strategy. Own Elaboration

3.2 Design Elements

3.2.1. Hierarchy

The current campus map has no hierarchy pathways. The only visible route is public transport route, thus is giving incomplete information (Problem Statement, Pages 07, 08). The user assumes the wayfinding performance is free and randomly between the buildings with no geographical accidents that obstruct the way to the desired destiny. So that, the available pathways are displayed approximately in the proposal but with a high level of updating to the real situation in order to distribute the flow of people on campus and the same time organize the zones (Site analysis: 4.3.7 Pedestrian Hierarchy Routes, Page 39).

The public transport circle route around campus is containing all the path network system. From its center four main pathways are extended in different directions to reach the edges. Thus, the zone limits are generated and the network of paths in harmony with the rhythm of the landscape are contained in these zones (Site analysis: 4.3.5 Public Transport Analysis, Page 37).

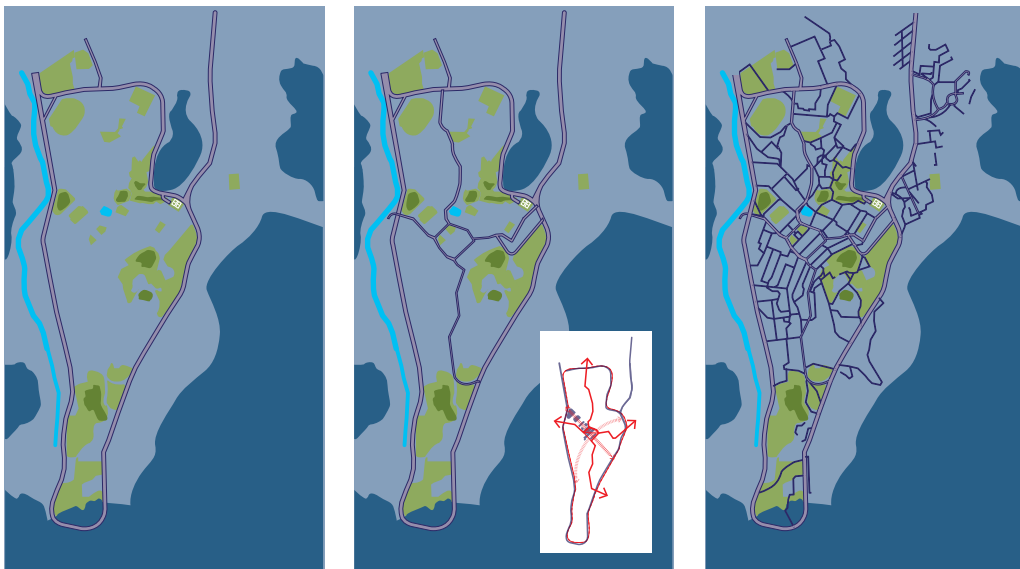


Figure 45. hierarchy. Own Elaboration

3.2.2 Color

Color is a powerful communication tool and can be used to signal action, influence mood, and cause physiological reactions having effects on our bodies and minds.

While perceptions of color are somewhat subjective, there are some color effects that have a universal meaning. Colors in the red area of the color spectrum are known as warm colors and include red, orange and yellow. These warm colors evoke emotions ranging from feelings of warmth and comfort to feelings of anger and hostility. Colors on the blue side of the spectrum are known as cool colors and include blue, purple and green. These colors are often described as calm, but can also call to mind feelings of sadness or indifference. For example, anecdotal evidence has suggested that installing blue-colored streetlights can lead to a reduction of crime in those areas. (Blue streetlights believed to prevent suicides, street crime. (2008, Dec. 11).¹⁹⁾ However, the perception can vary from culture and language.

The language and all the cultural aspects involved on it are a barrier in a universal design. In order to achieve the universal design, very basic colors are used in the signage system. These can be defined as a class of words which canonically identify colors, which are not composed of names of other color terms, cannot be classified as a subset or variant of another color term, are not specific to a particular object or substance, and which are known and clear to all speakers of a language. The English language has 11 basic color terms: black, white, red, green, yellow, blue, purple, orange, grey, pink, and brown.²⁰⁾

19-20) Human Color Perception, Cognition, and Culture: Why "Red" is Always Red. Timothy King. Department of Anthropological Sciences, Stanford University, Stanford, California, 2005.

Therefore, under this criteria colors were investigated considering similar hue and balanced saturation, taking into account the proper legibility level and the contrast between them, and comparing also with colors that are often used in city maps and wayfinding designs.

From the 11 basic colors, 5 were assigned to cardinal directions: green, yellow, pink, blue and brown, plus the purple color to identify a more independent campus area.

Green, yellow, pink, blue and black (replaced by brown due to negative perceptions) are associated with Cardinal directions in world cultures. Many cultures not descended from European traditions use cardinal directions, but have a number other than four. Typically, a “center” direction is added, for a total of five. Rather than the Western use of direction letters, properties such as colors are often associated



Figure 46. Eleven Colors Own elaboration.

with the various cardinal directions—these are typically the natural colors of human perception rather than optical primary colors.²¹⁾

Dynastic Chinese culture and some other Central Asian cultures view the center as a fifth principal direction hence the English translated term “Five Cardinal Points”. Where it is different than the west is that the term is used as a foundation for I Ching, the Wu Xing and the five Naked-eye planets.

21) Ukrainian Soviet Encyclopedic dictionary, Kiev, 1987.

In traditional Chinese astronomy, the zodiacal belt is divided into the four constellation groups corresponding to the four cardinal directions. Each direction is often identified with a color, and (in the case of China) with a mythological creature of that color. Geographical or ethnic terms may contain the name of the color instead of the name of the corresponding direction.²²⁾

In Mesoamerica and North America, many traditional indigenous beliefs include four cardinal directions and a center. Each direction was associated with a color, which varied between groups but which generally corresponded to the hues of corn (green, black, red, white, and yellow). There seems to be no “preferred” way of assigning these colors; as shown in the table, great variety in color symbolism occurs even among cultures that are close neighbors geographically.²³⁾




EUROPE		Slavic	<table><tr><th>N</th><th>E</th><th>S</th><th>W</th><th>C</th></tr><tr><td></td><td>Green</td><td>Black</td><td>Red</td><td></td></tr></table>					N	E	S	W	C		Green	Black	Red	
			N	E	S	W	C										
	Green	Black	Red														
ASIA		China	Black	Cyan	Red	White	Yellow										
		Ainu	Black	Blue	Red	White	Yellow										
		Turkic	Black	Blue	Red	White	Green										
		Kalmyks	Yellow	White	Blue	Red	White										
		Tibet	Blue	Yellow	Red	Green	White										
AMERICA		Apache	White	Yellow	Blue	Black											
		Aztec	Black	Red	Blue	White	Green										
		Cherokee	Blue	Red	White	Black	Green										
		Lakota	Red	Yellow	White	Black	Blue										
		Mayan	White	Red	Yellow	Black	Green										
		Navajo	Black	White	Blue	Yellow											
		Pueblo	Yellow	White	Red	Blue											
		Sioux	White	Red	Yellow	Black											
		Tarascan	Yellow	Red	Black	White	Blue										

Figure 47. Colors of directions²³

22) Cardinal colors in Chinese tradition. 2007

23) Colors of the Four Directions. 2010

3.2.2.1 Color Distribution

Although the selected colors have a character of equitability, it has established a certain hierarchy to reinforce the main points of people flowing, accesses areas or outputs, and considering the visual contrast to achieve balance and readability. Excepting the landscape elements such as vegetation, water, land surface and its levels, the 6 different regions with its own landscape's characteristics were assigned by a specific color (Site analysis: 4.3.4 Zoning, Page 34). The region hierarchy is not only given by the proximity to the University Library, but also by the busiest regions and therefore greater confusion. In this sense, the valley landscape and the first slope type landscape regions are using the most outstanding colors: green, yellow and pink. In a second level of the hierarchy, the terrace landscape and residential region are using an average level of color contrast: blue and purple. And the most isolated mountain landscape region occupies brown color. The red is used in order to pop up the user's location and everything is held on the Seoul National University's dark blue identity color.

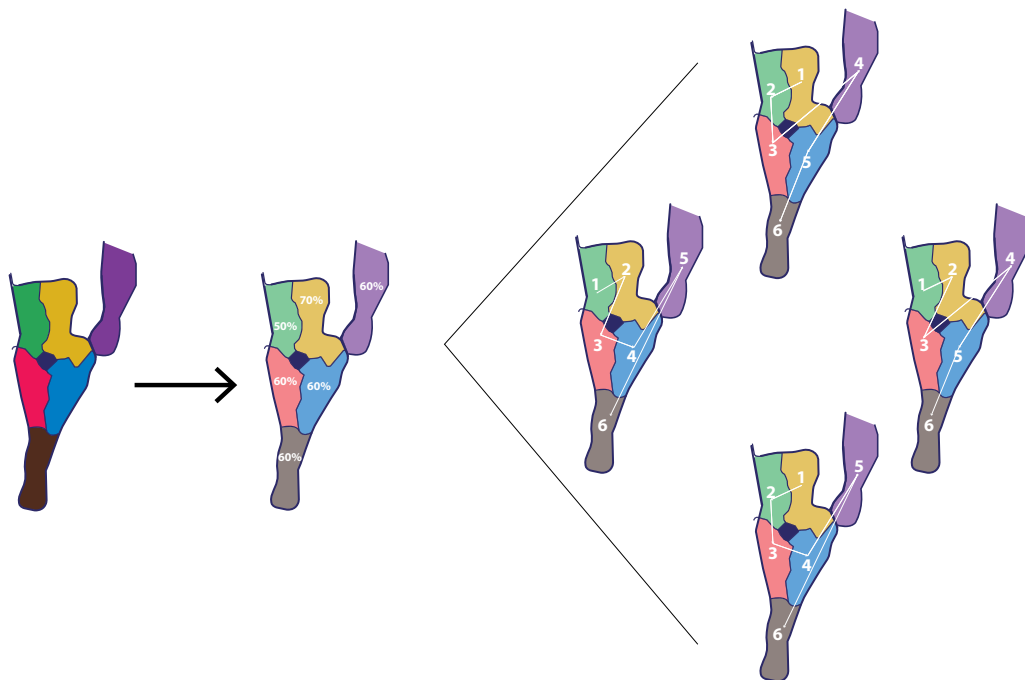


Figure 48. Color Distribution. Own elaboration.

3.2.2.2 Color Specifications

Under this color strategy it is possible to ensure rapid perception and accurate identification and the sense of place of every region, the order in readability and to coordinate with a logical numeric system for buildings among other advantages.

The space color system used to recognize the SNU wayfinding colors are CMYK (Cyan Magenta Yellow and Black), RGB (Red, Green and Blue) and the Pantone Solid Coated.

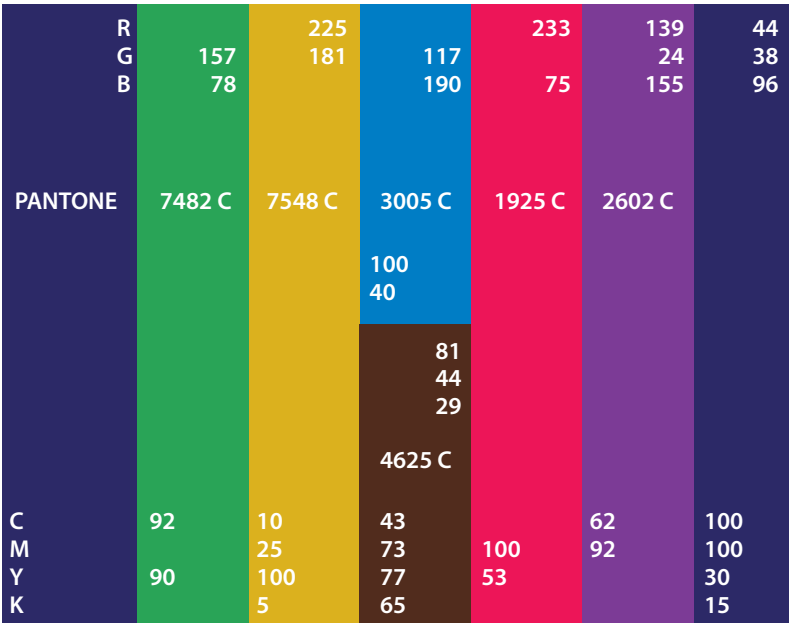


Figure 49. Color Specifications.²⁴⁾ Own elaboration.

24) Pantone 2014

3.2.3 Naming

According to the zoning by landscape types, campus zones have been tagged recalling its topographic features (Site analysis, 4.3.4 Zoning, Page 34). The final designation and its significance is described as:

- 1. Lowland:** (North Valley) The term refers to low-lying alluvial land near a river.
- 2. Hill:** (Hill's slope zone) A hill may refer to a particular section of flat terrain without a massive summit.
- 3. Upper Terrace:** (Terrace zone) A terrace consists of a flat or gently sloping geomorphic surface that is typically bounded one side by a steeper ascending slope. It is Upper due to its high level.
- 4. Valley:** (South Valley). It is an elongated plain between ranges of mountains, hills, or other uplands, often having a river or stream running along the bottom.
- 5. Mountain:** It is a large landform that stretches above the surrounding land in a limited area, usually in the form of a peak and it is generally steeper than a hill.²⁵⁾
- 6. SNU Village:** (East Valley) It is a human settlement or community, larger than a hamlet but smaller than a town, with a population ranging from a few hundred to a few thousand.²⁶⁾ The program for this zone is different to the “whole campus” and quite isolated, then its name’s significance intends to make this distinction.

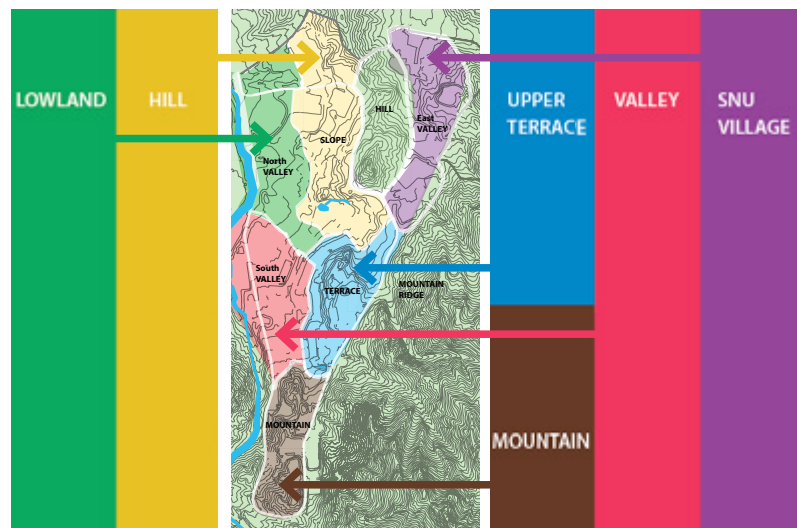


Figure 50. Color and naming. Own elaboration.

25) Whittow, John. Dictionary of Physical Geography. London, 1984.

26) collinsdictionary.com

3.2.4 Numbering System Idea

Current numbering system has no logic and this is the main trouble for wayfinding users on campus (Survey, Page 18). The following diagram analyzes the directional rhythm by following the universal logical numbers. The result is a chaotic network with no sense. In comparison, the numbering system idea is designed considering the new navigation strategy from the center to the edges. In this context, the University Library is taking the number 1 then every zone starts from number 2. As long the building is far from the Library the number is increasing. Thus, the maximum number is 55 in the Hill zone (Yellow).

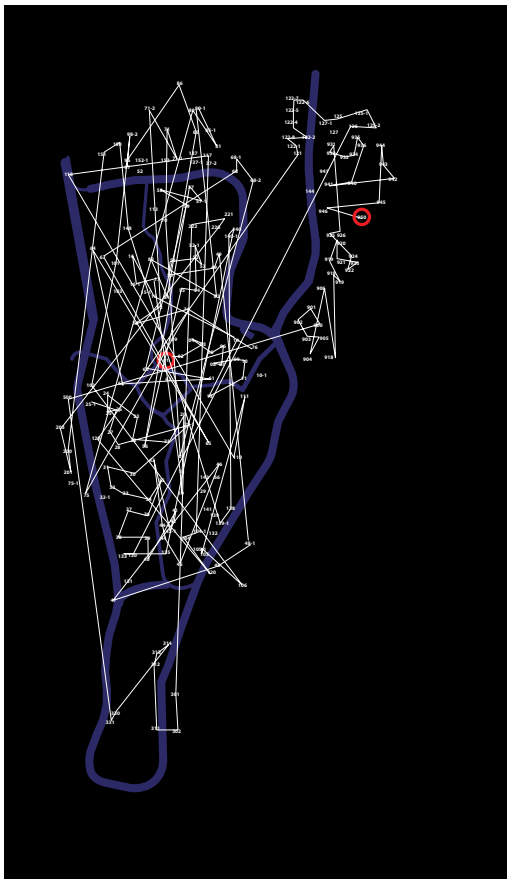


Figure 51. Current numbering system diagram. Own elaboration.

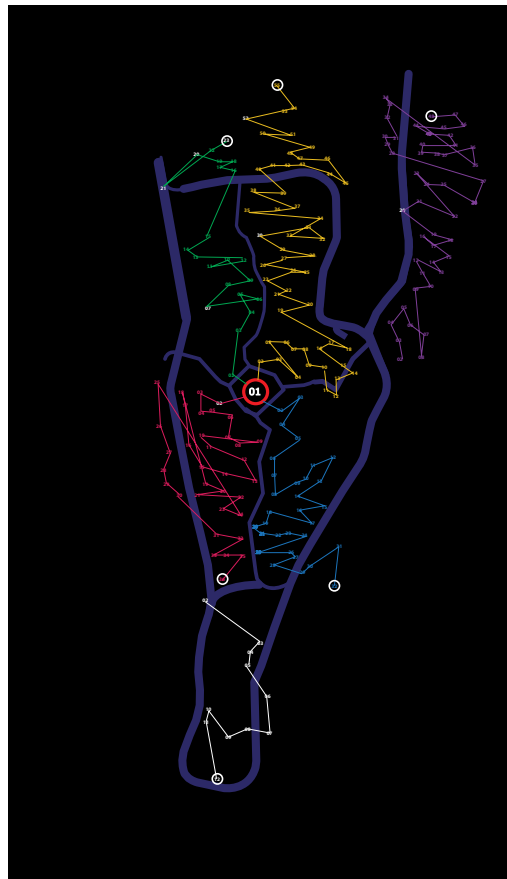


Figure 52. New idea of numbering system diagram. Own elaboration.

3.2.5 Landmarks and Icons

Landmark is a recognizable natural or man-made landscape feature essential for the wayfinding process. The current campus map has excessive detail information that does not allow the landmark's visibility but the Main gate and stadium. About 30% of Koreans and non-Koreans users stated that one of the main difficulties finding locations is the lack of landmarks (Survey, Page 17). In response to this weakness, the new design tends to display at least one landmark per zone. From North to South: Main Gate, MoA Museum of Art, Posco, University Museum, Kyujanggak Archives, Back Gate, University Library, Student Center, Gwanak Mountain Peak. These landmarks have a unique graphic code to highlight them instantly. Then, a different code for the Main Stadium, Jahayon Pond, and the Power plant is used.

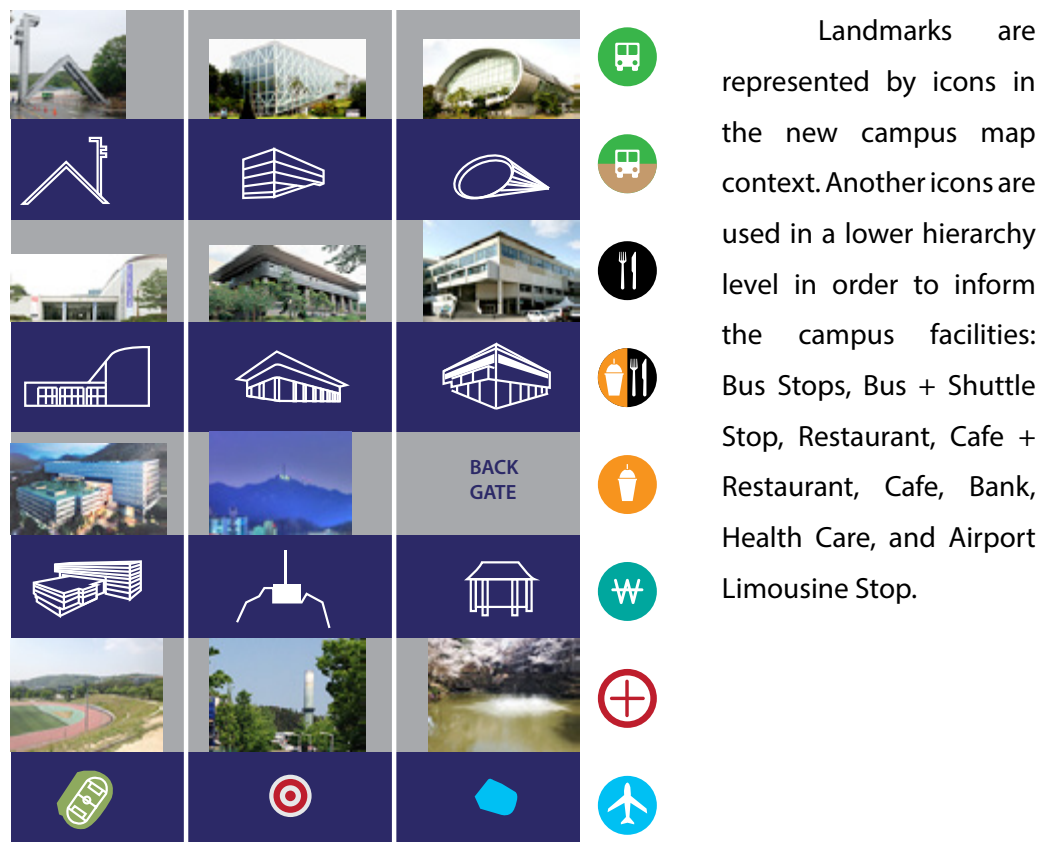


Figure 53. Landmarks and Icons proposal. Own elaboration.

3.3.1 Campus Map Idea



Figure 55. Campus map idea. Own elaboration.

3.3.2 Campus Map Adapted



Figure 56. Campus map. Own elaboration.

The campus map talks by itself. The variation between both designs is the number system that in the original idea is logical and easy to find through the circle distance measure method which also works in the adapted version but although the efficiency is lower than the logical system it has improvements in the wayfinding performance.

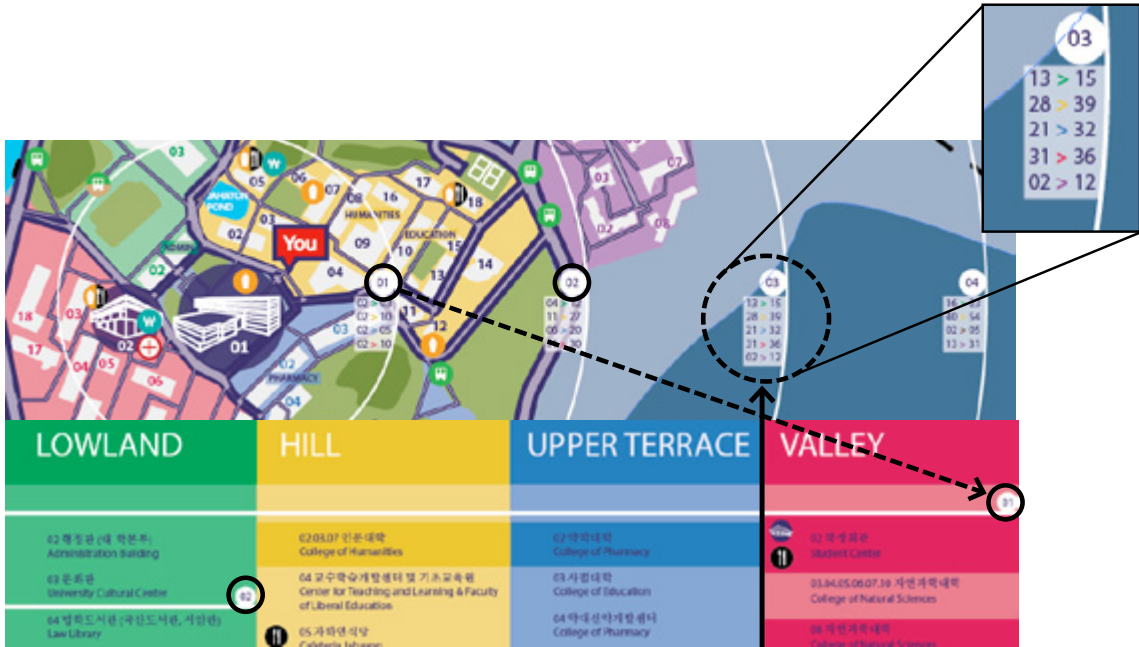


Figure 57. Original campus map number finding system idea. Own elaboration.



Figure 58. Campus map number finding system adapted. Own elaboration.

3.4 Signage System

The signage components are working as a system through the landscape types color code. The components are a design extension from the campus map categorized in five wayfinding elements in the landscape: campus map signboard (1), zone panels (2), college routers (3), and building college panels (4), and building panel (5). (Plus printed / web map).

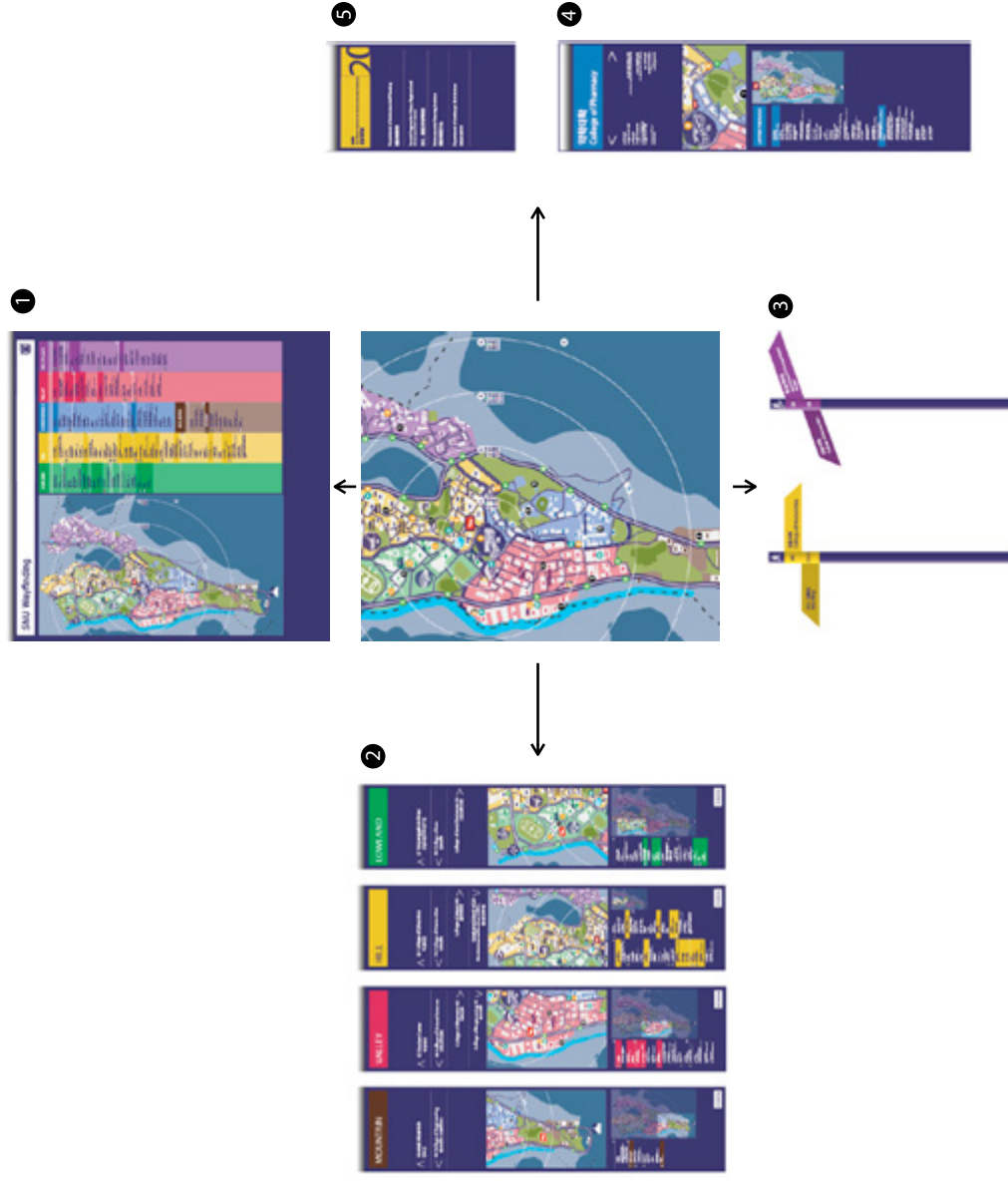
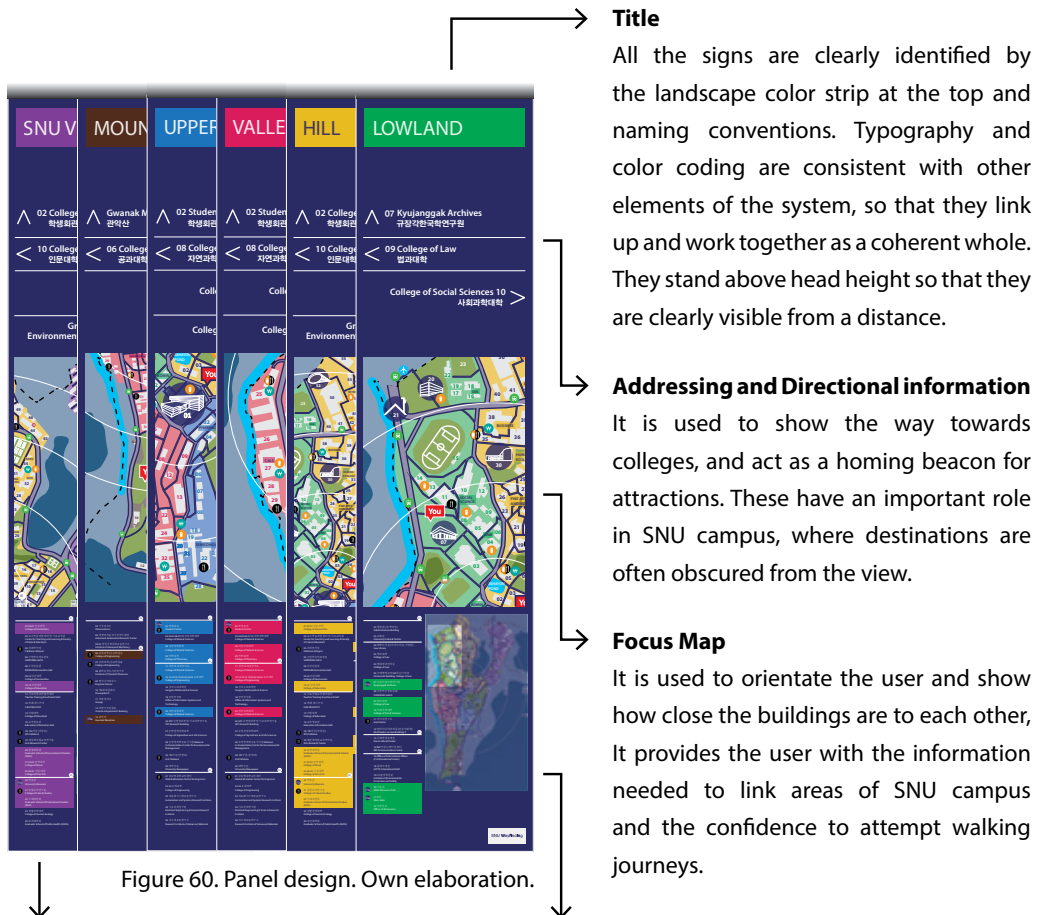


Figure 59. Signage system. Own elaboration.

3.4 .1 Panel Specifications

Because of the destination density in SNU Gwanak campus, a map-based system is the most appropriate and practical solution. It can alert the user to over 200 destinations. SNU wayfinding's components act as both area identifiers and route supports, helping people to build their personal mental maps.

The design criteria respond to the general to particular logic. In this sense, main panels are expressed and manifested by zone or college panel at the corresponding location.



Building Finder

List of Colleges, buildings and reference points to find destinations on a map. It is a means of quickly realising what is around.

Overview Map

It is used to find a destination, the end point of the journey. It is littered with useful landmarks, so the user can memorably guided towards specific routes and points. Also, it has a role of self-localize within the campus.

3.4 .2 Family of Sign Components

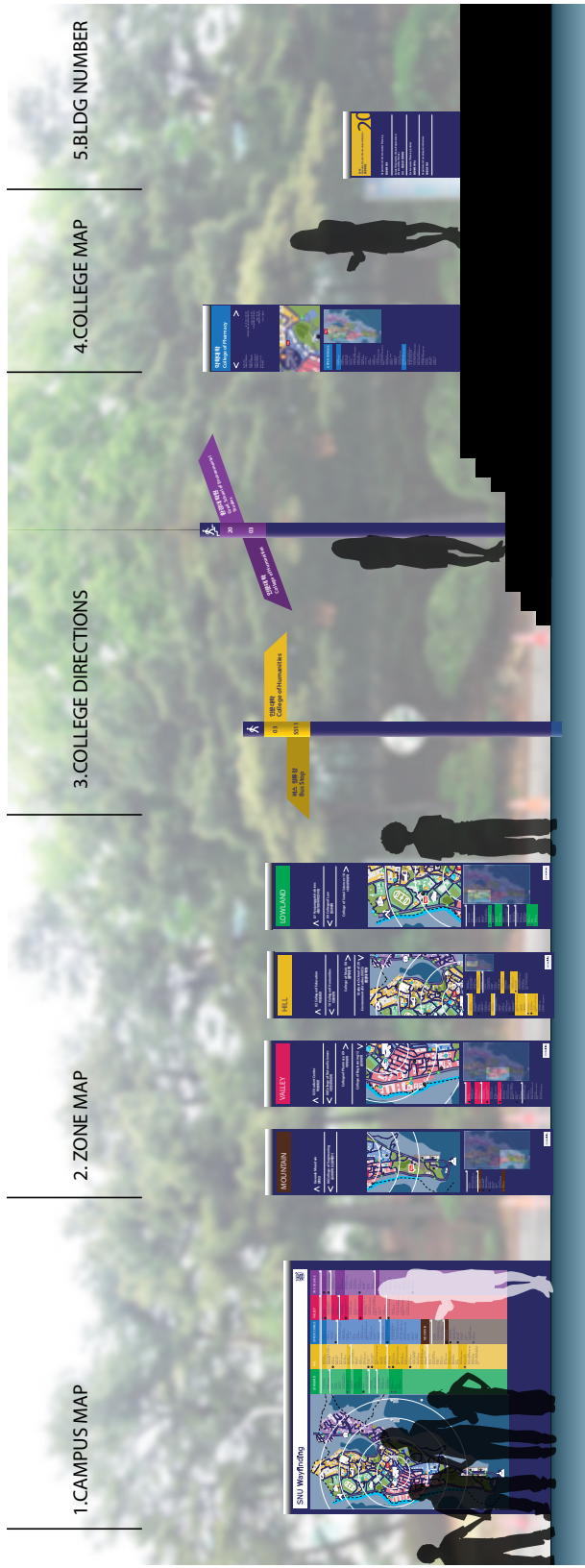
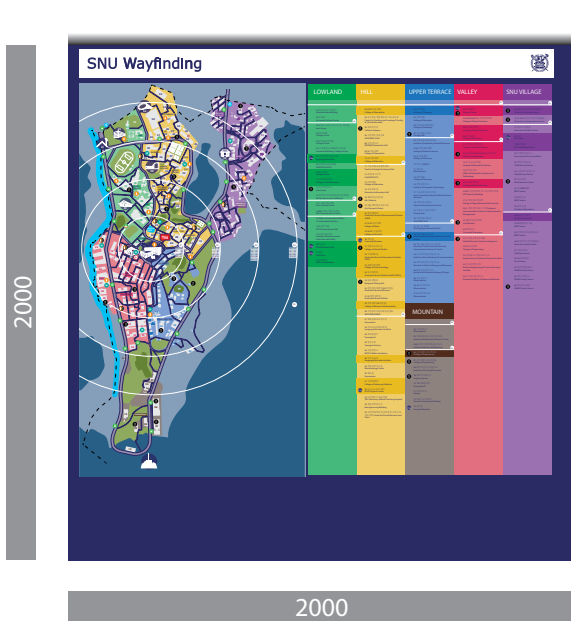


Figure 61. Sign components. Own elaboration.

3.4.3 Sign Layout

1. CAMPUS MAP



2. ZONE MAP

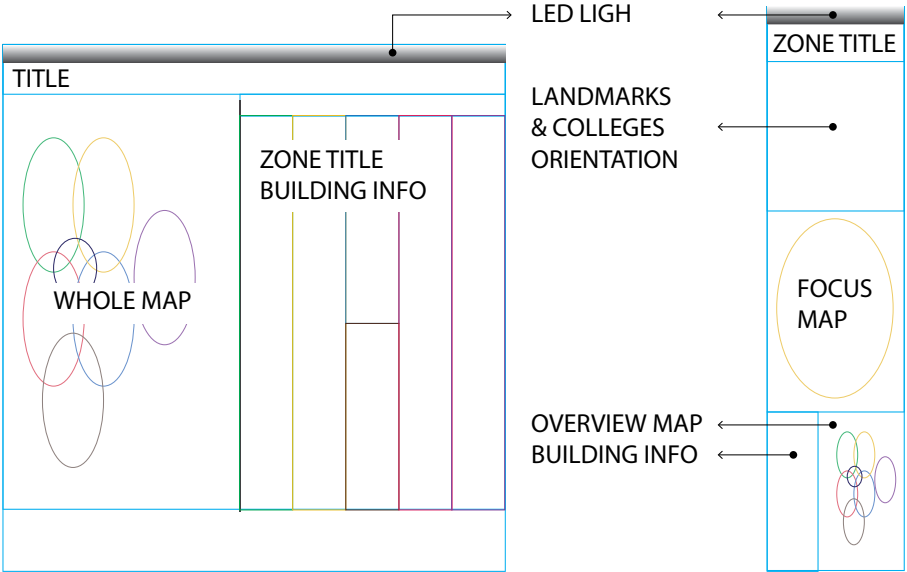


Figure 62. Layouts. Own elaboration.

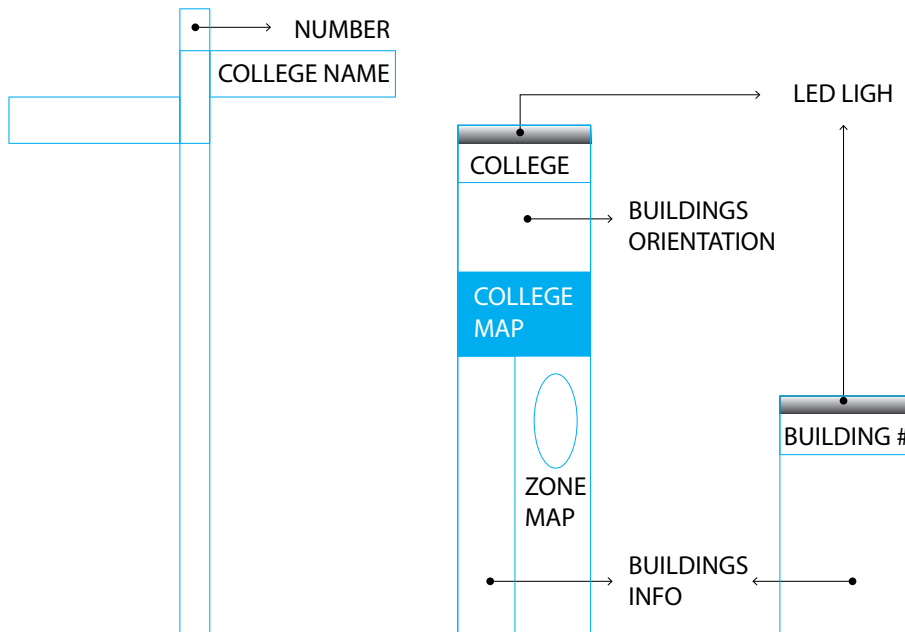
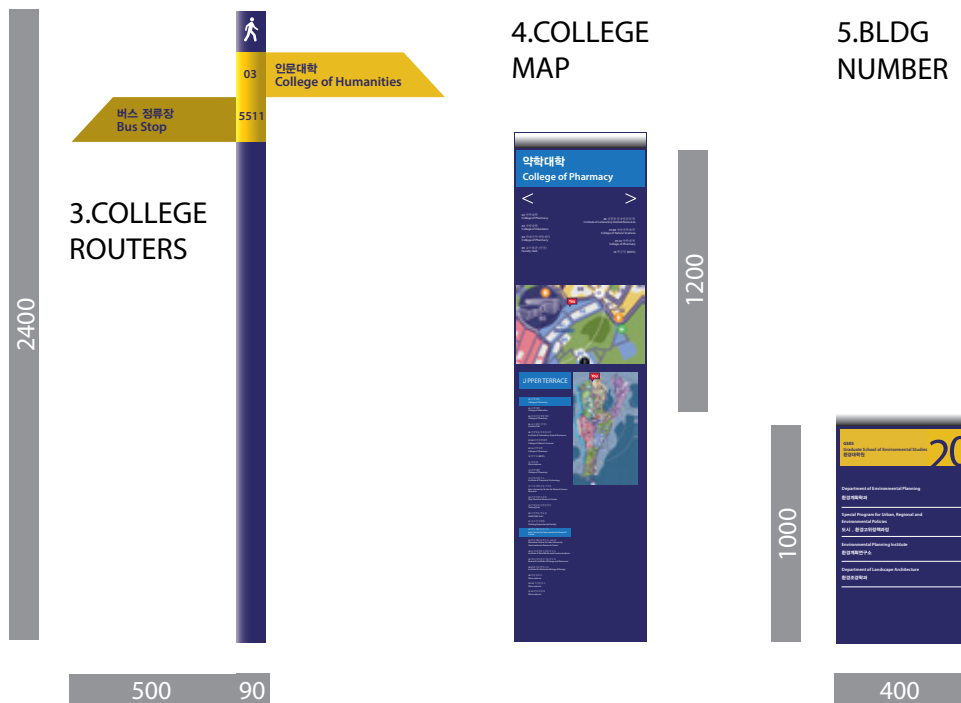
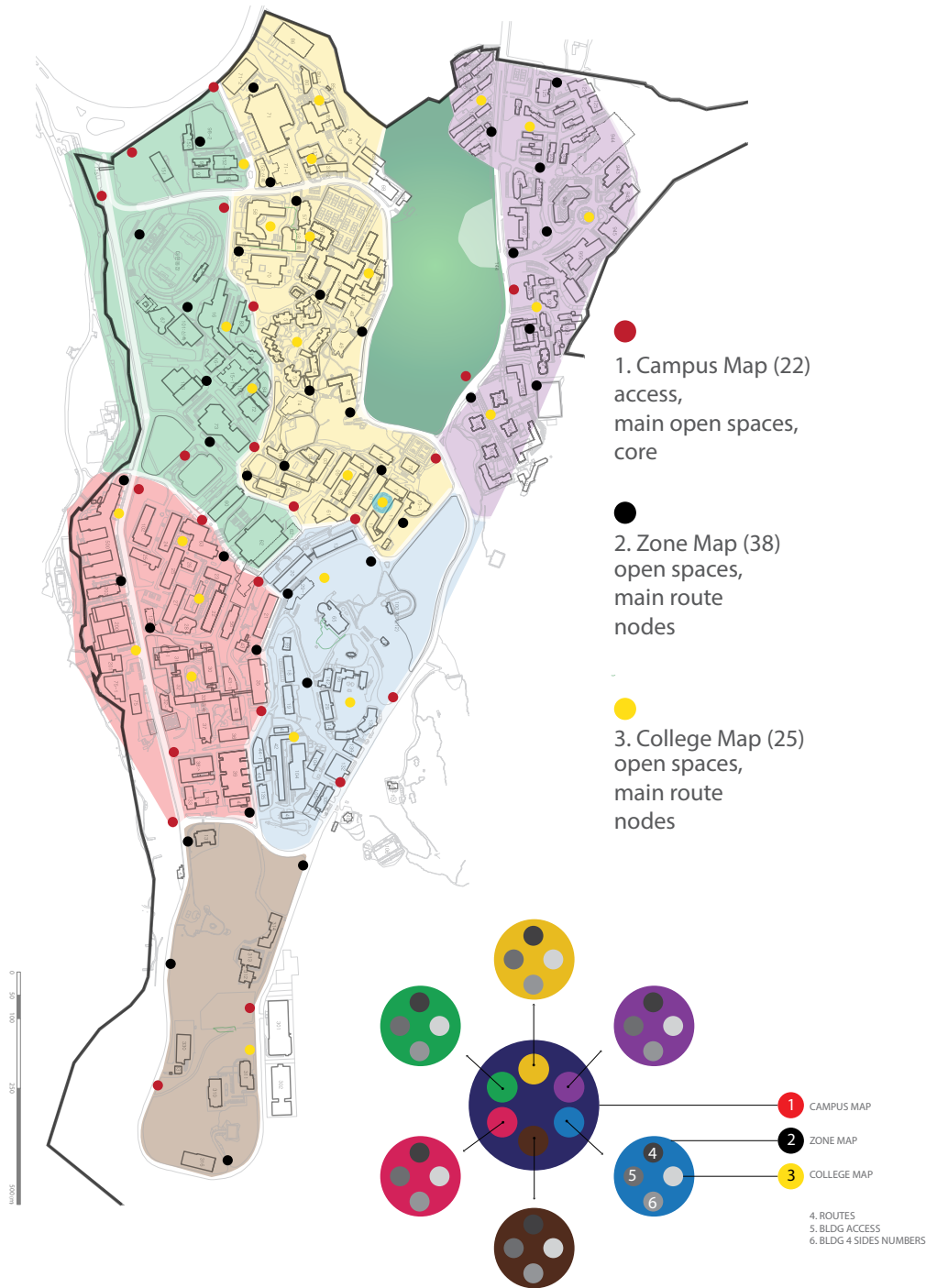


Figure 63. Layouts. Own elaboration.

3.4.4 Signs Location Map



3.5 Comparison and visualization



Figure 65. Comparison College of Humanity. Own elaboration.



Figure 66. Comparison campus maps. Own elaboration.



Figure 67. Comparison panels. Own elaboration.

Chapter 4 Design Proposal

As a research method, an experiment and focus group were implemented after the preliminary design was devised.

4.1 Experiment

Two Koreans and two non – Koreans who are not familiar with the campus were asked to find a specific building 2 times by using both current and new maps. At the second time they switched the maps in order to know and compare the usefulness in reality. They were not informed about the maps and campus structure or any other detail. Every certain minute they left the starting point alone and the time that they took to the building was measured.

Main objective: To improve the proposal of signage system.

Research Tool	Target	Objective
Simulation of way finding with the current and new maps.	Two foreign students and two Korean students who are not familiar with the campus.	To get information about the usefulness of the new map in comparison with the current map.
Exposing SNU students to the new map by asking them for help to locate a specific building.	Ten current SNU students.	To capture reactions and perceptions of SNU students while using the new map.
Focus group.	Two foreign students and two Korean students who are not familiar with the campus.	To get the opinion of potential users about other components of the proposed signage system.

Figure 68. Table. Own elaboration.

4.1.1 First Task and Findings

The starting point was from one of the main entrances and the chosen buildings were located in different landscape zones.

(1) Building 49, Hill Zone

(2) Building 43, Valley Zone



Figure 69. Campus map zoom in. Own elaboration.

- A common finding for both maps was that south-north orientation was better for the users to locate themselves..
- Using the current map took 20 minutes on average; landmarks were hard to find; existing signboards do not play a significant role in the wayfinding performance.
- Using the new map took 15.5 minutes on average, which means an improvement of 22.5% in terms of time; too colorful but matches better with reality; needs basic explanation.

4.1.2 Second Task and Findings

The next task was asking random SNU students about a location by showing the new map to observe their reactions.

- Students did not focus on the map to respond to the participants, but they tried to think about other visual references to explain how to get there
- SNU students had a hard time giving references on how to find places
- The new map had in general a good reception, but it was judged as too colorful
- Students said that it is preferable to the current map

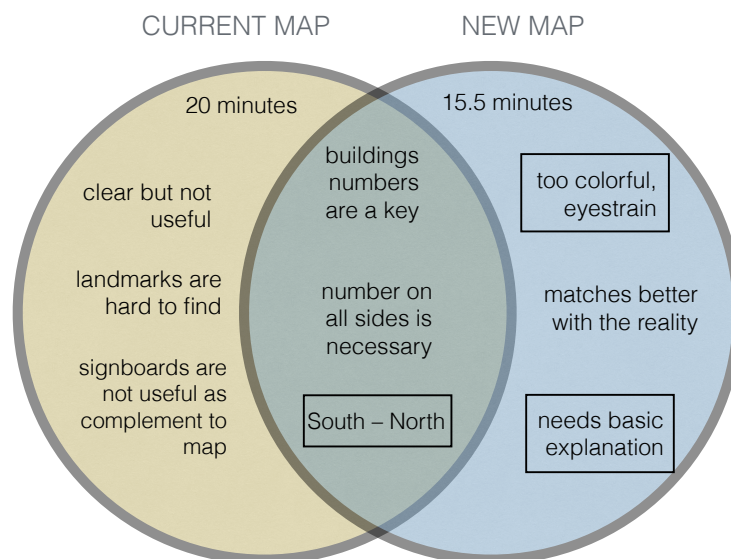


Figure 70. Findings diagram. Own elaboration.

4.2 Focus Group

The same participants attended a focus group explaining the new design and showing how it looks comparing to the current situation.



Figure 71. Comparison between current and new design. Own elaboration.

4.2.1 Findings

- The participants think that the new map is too colorful and makes the user visually tired.
- The idea of colors to differentiate could be useful, but only if the signs in the campus are coherently designed with the map.
- Numbers are the key to find ways on campus, but not all of them are easy to find on buildings.
- The design proposed is in general described as modern, but it could be improved adding an additional landmark (the sculpture).
- The new signboard system is visible and gives a sense of place whereas the current one does not.

4.3 Final Design

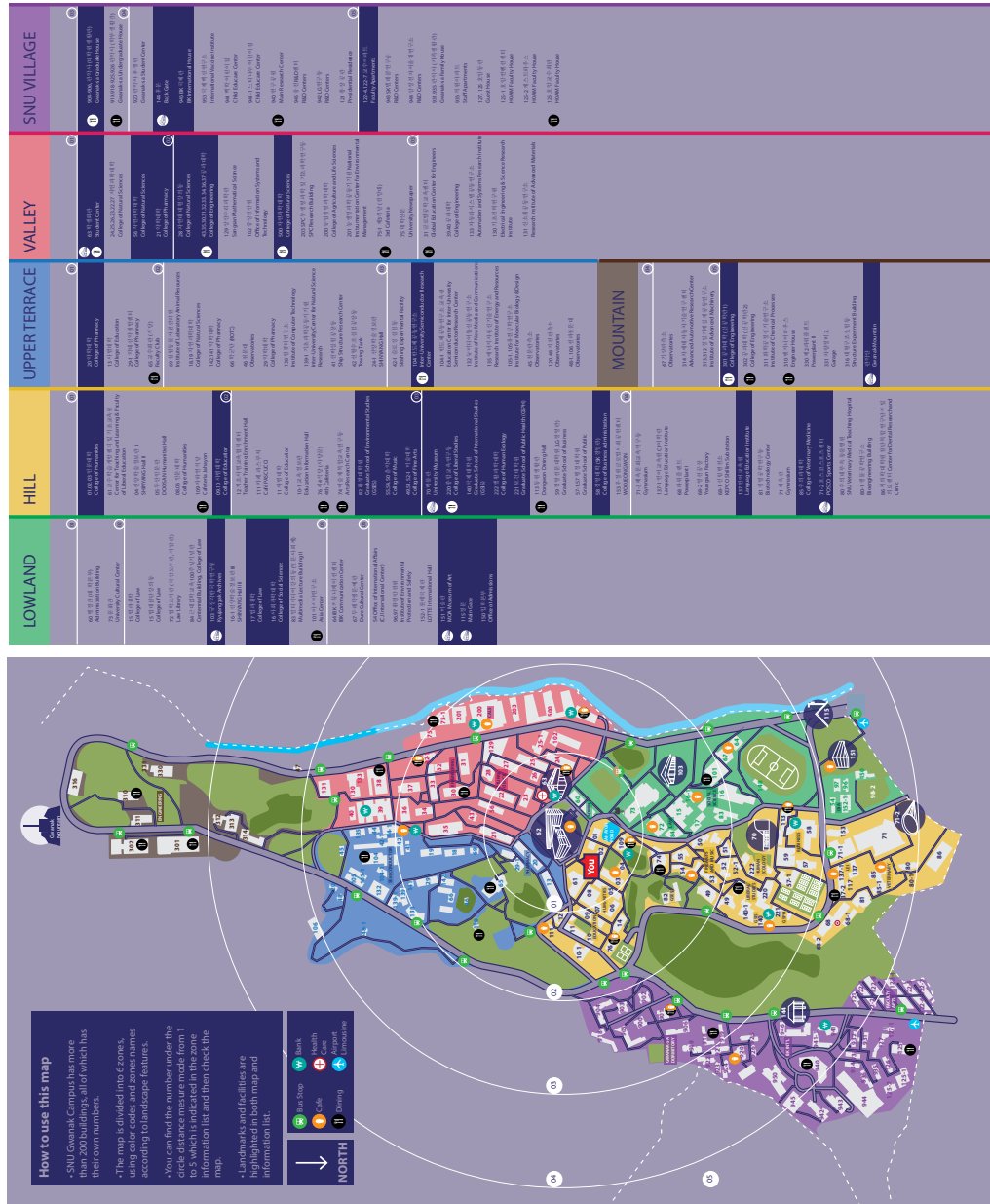


Figure 72. Final Design. Own elaboration.

How to use this map

- SNU Gwanak Campus has more than 200 buildings, all of which has their own numbers.
- The map is divided into 6 zones, using color codes and zones names according to landscape features.
- You can find the number under the circle distance measure mode from 1 to 5 which is indicated in the zone information list and then check the map.
- Landmarks and facilities are highlighted in both map and information list.

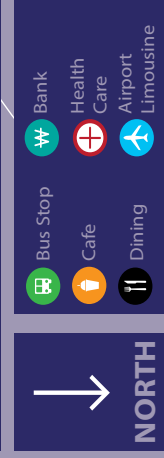


Figure 73. Final Design. Own elaboration.



Figure 74. Final Design. Own elaboration.

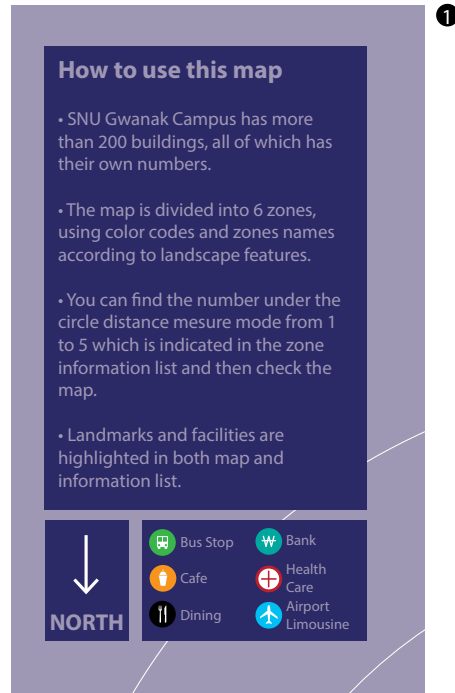


Figure 75. Final Design zoom in. Own elaboration.

4.3.1 Campus Map Adjustments

The design was adjusted basically in terms of colors according to the second phase of research conclusions (Page 67), for the information complement panel next to the campus map as it shows in the previous page (Page 69).

Aside from colors, a brief explanation (1) and an important missed landmark was included (2). Also, the orientation North - South was modified to South - North.

4.3.2 Comparison Preliminary and Final Design



Figure 76. Comparison between preliminary and final design. Own elaboration.

Chapter 5 Conclusion

Through the research methods used in this study, it has been demonstrated that SNU's wayfinding system presents fundamental shortcomings, such as:

1. An improper universal design, including confusing cardinal orientation points and inconsistent availability of multi-language signage
2. Features of the landscape are not properly considered in the design
3. Excessive Information and no hierarchy in signage system components
4. The absence of recognizable pedestrian routes
5. An illogical numbering system for buildings

From these findings, a new orientation system was designed based on three main principles:

1. To create a new wayfinding code based on the four landscape types found on SNU campus
2. To strengthen the pedestrian path hierarchy on three different levels
3. To establish a logic navigation from the core in coordination with the cardinal points

The proposal includes the develop of the following graphic pieces of ance and its intervention on the environment:

Two proposals for a new SNU campus map include the transformation of the current numbering system and a real map that is adapted to an improved numbering system. From the campus map, the improvements in the landscape include signboards in different dimensions, varying with the specific purpose for the specific location -a main signboard, a zone signboard, and a college signboard. In order to reinforce the system, street routers for the zones were also designed. Finally, the building's panels are aligned to the new system.

To reinforce the findings of this proposal and to determine the impact of this new system, the elaboration of experiment about finding buildings through the current and proposed map was made and a focus group was conducted. The new design had a positive reception and demonstrated improvements of approximately 22,5% in terms of time for the wayfinding performance; however, color observations were identified after the experiment, which led to the recommended adjustment to the campus map.

According to the type of landscape, a further study of the soil, climate, water and vegetation is suggested during all four seasons. A water intervention in the vertical North - South main pedestrian route would be highly effective for the wayfinding process along the campus, not only through the simple fact of following the water flow, but also by simply listening to the sound of the water during the trip. The Jahayon pond could be extended towards the north and south, creating new ponds in the highland and the lowland beside the main stadium. Recognizable vegetation is suggested, which will provide harmonic complements with the landscape between the West-East pedestrian route. Pine groves along the upper terrace and mountain landscape and willow trees for the valley next to the stream will provide harmony with the landscape and would be very appropriate for the pedestrian route. The materials used to construct path surfaces, the path width and overall profile should also be aligned in the main routes to establish a more ideal and coherent pathway. Such improvements will reassure users that they are going in the correct direction, allowing them to enjoy their environment and pay more attention to their surroundings.²⁷⁾

27) Hans Liodl, Stefan Bernard. Opening Spaces, Design as Landscape Architecture, 2002.

I believe this proposal will offer improvements to the wayfinding process as long as the whole system is put in place, in consideration of:

- 1.** The new proposal is an approach to universal design that is organized based on the characteristics of landscape types features to achieve a quick and easy orientation.
- 2.** According to the landscape, different areas with their nominations and colors that insinuate its own characteristics have been generated, providing a sense of place and strengthening the identity.
- 3.** It has established a chromatic and informative hierarchy to avoid excesses and make the wayfinding performance more efficient through all the system's components.
- 4.** It has been identified and reinforced the walk able main routes that are outlined by the different landscapes.
- 5.** A search method for numbers on the maps based on radius distance in relation to the core was created.
- 6.** All the signage components are aligned and they complement each other to work as a system of orientation.

Chapter 6 Appendix

6.1 Survey Questions

About Seoul National University Gwanak Campus

* Required

1. Please select your level (speaking, reading, listening) of Korean Language *

From the following scale of 1 to 5. 1 = Complete lack of understanding,
and 5 = Perfect understanding.

2. How long have you been studying at SNU campus? *

Less than 3 months

3 to 6 months

6 months to 1 year

1 to 2 years

2 to 3 years

More than 3 years

3. List your 3 most visited buildings on campus? *

List the building number. If you do not know the number, please describe the building
with as much detail as possible; for example: Graduate Dormitory Cafeteria.

4. Why do you get lost at SNU campus? * Multiple choices

Language barrier

No street names

No clear milestone, landmark

Lack of signs / information

5. How do you usually find the directions at SNU Campus when you do not know the exact location? *

By using the SNU maps (printed or online maps)

By using map app (maps, google maps, etc...)

Asking verbal explanation

By following signs

6. Based on your previous answer (Question #5), what are the difficulties of finding the way as a foreigner? *

For example if your answer is map app, "Google Maps has no detailed maps to navigate."

7. According to the map, please choose all the points where you usually get lost or confused * Multiple choices.

Please write numbers related to areas, for example: 10,18,11, 31...



8. Which of the following do you think is the most efficient way to find directions on SNU campus? *

Universal / English signs

Maps

Asking people

Smartphone App

9. According to the above SNU campus pictures, where you think signs are necessary? * Select at least one option; maximum three options.



6.2 Experiment Questions

Task 1:

By showing current and new SNU campus map. Please find and arrive at the following buildings and control the time that it takes:

a) Building number 49

(Switch the maps)

b) Building number 43

Task 2:

By showing the new campus map to 2 random SNU students, ask the followings:

a) How can I get the building 72?

b) What do u think about this map?

6.3 Focus Group Questions

Through the comparison of the following photographs, please explain your feelings about:

a) Which signs are more visible?

b) Which signs give a safer sense of place and identity ?

c) Is the new system in harmony with the scenery?



서울대학교 관악 캠퍼스의 디자인 길 찾기

지도교수: 이유미

서울대학교 환경대학원 환경조경학과

카를로스 실바 로아

서울대학교 관악 캠퍼스는 한국의 수도인 서울에 위치한 국립 대학교인 서울대학교의 일부이다. 2013년 4월 1일, 서울대학교에 재학중인 총 학생 수는 28011명으로, 그 중 10% 이상은 외국인 학생들이다. 매년 외국인 학생수가 증가함에 따라, 이들이 보다 더 잘 적응할 수 있도록 관악캠퍼스를 보편적인 시스템으로 개선하여야 할 필요성이 발생하였다. 그러나 외국인 학생들이 겪는 소통 문제는 여전히 줄어들지 않고 있다. 외국인의 관점에서 볼 때, 단순한 식별 문제와 방향 인식 문제를 위시하여 수많은 언어 장벽이 존재한다. 서울대학교 관악캠퍼스는 복잡한 경관제도를 갖고 있는데, 산과 일부 평지, 개울, 초목 사이로 길이 나 있으며, 또한 이들 사이로 학교 건물이 위치해 있다. 경과는 곡선을 이루고 있으며, 기복 또한 상당하여, 방향을 잃거나, 목적지를 정확히 볼 수 없어 혼란을 야기한다. 그로 인해 길을 잃고, 가야 할 방향을 파악해야 하는 경우가 발생한다. 또한, 캠퍼스 내에 표지판이 부족하다는 점도 문제로 지적되는데, 이로 인해 목적지에 제 시각에 도착하지 못할 지도 모른다는 점을, 외국인 학생 뿐 아니라 방문객 및 한국인 학생들까지도 우려한다. 이 연구 조사는 서울대학교 관악캠퍼스에 적합한 표지판 시스템 설계안을 제안함으로써 길 찾기와 관련된 주요 문제점을 해결하는 데 목적이 있다. 이 설계안은, 서울대학교 캠퍼스를 이용하는 한국인 학생과 외국인 학생들의 필요를 파악하고 비교하기 위하여 활용한 여러 방식을 토대로 수립되었다. 또한, 새로운 시스템은 지형에 근거하여 고안되었다. 길 찾기를 위한 예비 설계는 실험을 통하여 검증되었으며 유용성을 입증하고 미비점을 보완하기 위하여 집단에 초점을 맞추었다. 수립된 가이드라인은 캠퍼스 내에서 활용되어 캠퍼스 설계에 기여할 수 있을 것이다.

주제어: 표지판 가이드라인, 표지판 시스템, 환경 설계, 캠퍼스 기획

학번: 2012-24085

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